



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : H03J 1/00	A1	(11) International Publication Number: WO 00/45511
		(43) International Publication Date: 3 August 2000 (03.08.00)

(21) International Application Number: PCT/US00/02244  
(22) International Filing Date: 28 January 2000 (28.01.00)  
(30) Priority Data:  
09/240,131 29 January 1999 (29.01.99) US

(71)(72) Applicants and Inventors: KWOH, Daniel, S. [US/US]; 3975 Hampstead Road, LaCanada, Flintridge, CA 91011 (US). LI, Kenneth [US/US]; 217 Laurel Avenue, Arcadia, CA 91006 (US). TSO, Kevin [US/US]; 633 North 21st Street, San Jose, CA 95112 (US).

(74) Agent: KHORSANDI, Marilyn, R.; Christie, Parker & Hale, LLP, Post Office Box 7068, Pasadena, CA 91109-7068 (US).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published**

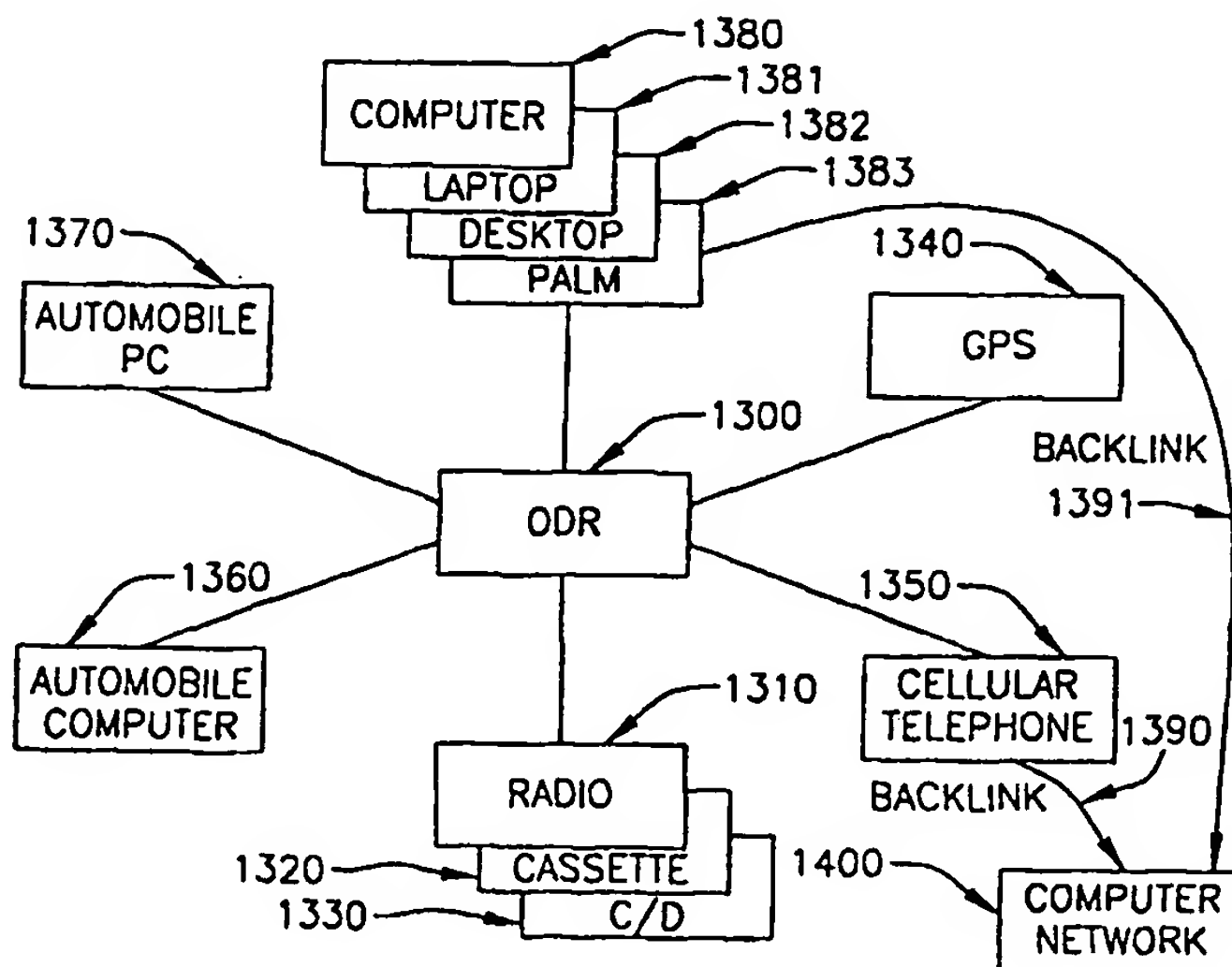
*With international search report.*

*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: APPARATUS, SYSTEMS AND METHODS FOR PROVIDING ON-DEMAND RADIO

**(57) Abstract**

The present invention provides On-Demand Radio ("ODR") features to provide ODR radio listeners with personalized news, entertainment, advertising and other information in an audible form ("On-Demand Radio" or "ODR"). The ODR radio unit (1300) communicates with, among other things, a Global Positioning System ("GPS") navigational system (1340), an automobile computer system (1360), and a cellular telephone (1350). The cellular telephone/GPS integrated ODR system deduces the location of the ODR system and plays advertisements, traffic conditions and other information according to the position of the ODR unit. Radio stations are identified for selection or are otherwise categorized according to the type of content provided and a user interface provides the user with a selection mechanism for selecting a particular radio program or category of radio content.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

1 APPARATUS; SYSTEMS AND METHODS FOR  
PROVIDING ON-DEMAND RADIO

FIELD OF THE INVENTION

5 The present invention relates generally to radios, and more particularly, to providing the radio listener with individualized information.

BACKGROUND

10 Prior to the invention of On-Demand Radio ("ODR"), radio listening was a non-interactive, passive, relatively unpersonalizable activity, both from the standpoint of the listener and the broadcaster. International Application Number PCT/US99/02034, International Publication Number WO 99/39466, the disclosure of which is incorporated herein by reference, as if fully stated here, for all purposes, disclosed the invention of On-Demand Radio and numerous features provided thereby for the personalization of both radio listening and radio  
15 content broadcasting.

From the listener's perspective, once a listener tunes a typical non-ODR radio to a particular radio station, be it AM or FM, the typical listener does not frequently change stations. Rather, the typical non-ODR radio listener receives whatever music, news, chatter, talk shows, interviews or other audible communication that is broadcast by the radio station to which the  
20 listener's radio is tuned. Furthermore, the typical non-ODR radio listener receives such audible communication in whatever order the non-ODR radio station to which the listener's non-ODR radio is tuned chooses to broadcast the audio signals.

The typical non-ODR radio listener is frequently content to choose a single station, for instance, for its genre of music, and to stay tuned to that same radio station for an extended  
25 period of time, for instance for the duration of the listener's commute to work. Some non-ODR radio require the listener to rotate a tuning dial in order to locate the next available receivable radio frequency, over which a local station broadcasts. More advanced non-ODR radios provide a "seek" tuner which finds the next available receivable station.

Many non-ODR radios, especially non-ODR car radios, provide "Memory" buttons so  
30 that the listener can program a particular key to tune a particular station. The Memory buttons provide a similar capability to the pre-remote television channel dial. That is, the non-ODR radio listener can program a limited number of Memory buttons, typically six, so that each button corresponds to a particular radio frequency over which the listener's top six local non-ODR radio stations are broadcast.

1 Typical non-ODR radios provide the listener with the ability to select either AM  
frequencies or FM frequencies. The selection can be made on some non-ODR radios with a  
single two-position button; other non-ODR radios provide two buttons -- one for AM, and  
another for FM. Some non-ODR radios provide the capability to select two different non-ODR  
5 radio stations for the same memory button -- one for AM; another for FM.

Most non-ODR radios provide a window of typically small size, to display the radio  
frequency to which the non-ODR radio is currently tuned. Many non-ODR radios, when turned  
off, display the current time.

Even with Memory button capability, the non-ODR radio listener often stays tuned to a  
10 single station for an extended duration of time. For instance, the non-ODR-radio-listening  
automobile driver, concerned about avoiding the day's worst traffic snarls, might be content to  
tune to the listener's most favored traffic and news station for the entire duration of the listener's  
commute. The commuter-listener's main goal, in this case, is to gain the insight necessary to  
navigate through the obstacle course of traffic jams, detours and other delays in store for the  
15 listener's commute that day. In this example, the traffic-concerned listener is not especially  
interested in the news and/or chatter that fills the station's broadcast between one traffic report  
and the next. Even though the commuter-listener is not especially interested in the news  
broadcasts, the commuter-listener resists changing the channel to a favorite music station during  
the news broadcasts because the commuter-listener does not know exactly when the traffic station  
20 might broadcast the most up-to-date information concerning the commuter-listener's particular  
traffic route.

Similarly, non-ODR radio broadcasters have not had a way to customize radio program  
content to suit the needs of individuals. Rather, each non-ODR radio broadcaster programs a set  
schedule of radio content for broadcast to all radio listeners. A non-ODR radio broadcaster  
25 chooses program content according to the broadcaster's understanding or best guess as to the  
preferences of a broadly defined category of people likely to listen to the genre of program  
content offered by that broadcaster. For example, most non-ODR radio stations offer  
programming according to a particular category of content, such as Rock, Country, Classical,  
News, or the like. Advertising is broadcast by a particular non-ODR radio station according to  
30 a format that the broadcaster believe best matches the broadcaster's understanding of the needs  
and preferences of the station's general audience.

As previously mentioned, International Application Number PCT/US99/02034,  
International Publication Number WO 99/39466, the disclosure of which is incorporated herein  
by reference, as if fully stated here, for all purposes, disclosed the invention of On-Demand Radio  
35 and numerous features provided thereby for the personalization of both radio listening and radio  
content broadcasting. Nevertheless, further ways are needed for the ODR radio listener to be able

1 to further customize programming content for the listener's individual radio listening and for the broadcaster to further target its broadcast of information, radio content and advertising to ODR radio listeners.

## 5 SUMMARY OF THE INVENTION

This application claims priority of U.S. Patent Application No. 09/240,131 ("APPARATUS, SYSTEMS AND METHODS FOR PROVIDING ON-DEMAND RADIO"), the disclosure of which is incorporated herein by reference, as if fully stated here, for all purposes.

10 The present invention provides additional On-Demand Radio ("ODR") features to provide ODR radio listeners with personalized news, entertainment, advertising and other information in an audible form ("On-Demand Radio" or "ODR"). The ODR radio unit communicates with, among other things, a Global Positioning System ("GPS") navigational system, an automobile computer system, and a cellular telephone. The cellular telephone/GPS integrated ODR system  
15 deduces the location of the ODR system and plays advertisements, traffic conditions and other information according to the position of the ODR unit. Radio stations are identified for selection or are otherwise categorized according to the type of content provided and a user interface provides the user with a selection mechanism for selecting a particular radio program or category of radio content.

20 Many different types of embodiments or models of ODR radio units are possible, including but not limited to: vehicle/automobile, Walkman, kitchen counter, table, shower, part of clock-radio-alarm, etc. The preceding list of different types of ODR models is exemplary and is not a limitation of the invention.

The present invention discloses apparatus, methods and systems such that radio content  
25 is downloaded and/or broadcasted to the user, according to personalized user information, stored in the memory of the user/listener's individual ODR radio unit device, and converted into audible signals for the user.

References in this application to "memory" storage include, but are not limited to: random access memory, magnetic storage devices and optical storage devices. The user can  
30 navigate through the stored information using only a few contextually-sensitive keys, or in an alternative embodiment, through spoken commands.

Downloading/broadcasting of the information can be accomplished in a variety of ways, including but not limited to: radio broadcast, subcarrier broadcast, satellite transmission, downloading from the Internet, and/or downloading from an information service through a  
35 computer and/or computer network.

1

Information transfer to the ODR can be accomplished in a variety of ways, including but not limited to: through a radio receiver in the ODR; through infra-red communication devices, computer communications using, e.g., a modem, and/or through a memory medium such as, but not limited to, a flash memory card, hard disk, and the like.

5

An ODR broadcast delivery service is provided (the "Broadcast System"). The function of the Broadcast System is to provide information to the individual listener's ODR radio unit in which the individual listener is interested.

10

A mechanism is provided by which the individual radio listener identifies the radio listener's individual radio unit, personal interests, personal preferences and individualized settings and options ("Control Set-up Specifications").

Certain or all aspects of the listener's Control Set-up Specifications are used by the Broadcast System to narrowcast information to the listener's individual radio unit ("On-Demand Narrowcasting").

15

As an alternative to and/or in combination with, On-Demand Narrowcasting, the Broadcast System transmits certain or all aspects of the listener's Control Set-up Specifications which are received by, and installed in, the listener's individual radio unit ("In-radio Set-up Specifications," also referred to as "In-unit Profile"). In an alternative embodiment, the user communicates to the ODR unit the user's In-unit Profile information.

20

According to the present invention, the listener's In-radio Set-up Specifications (also referred to as "In-unit Profile") can be used by the listener's individual radio unit to automatically select information delivered by the Broadcast System according to the individual listener's specified interests ("On-Demand Reception").

25

Apparatus, methods and systems are provided for downloading data from a host computer, several host computers, or one or more web sites to an ODR radio unit device with memory (such as random access memory) sufficient to hold said data. In accordance with Control Set-up Specifications and/or In-radio Set-up Specifications, the data is transmitted to, selected by, and/or stored in the memory of the listener's individual ODR unit.

30

Apparatus, methods and systems are provided for downloading data from a host computer, several host computers, or one or more web sites to an ODR radio unit device with memory (such as random access memory) sufficient to hold said data, and said data used by the ODR radio unit to record radio shows broadcasted by regular AM and/or FM radio stations.

35

The listener's individual ODR radio unit provides methods, systems and apparatus ("User Interface") by which the listener can request for listening, specific information stored in, or received by, the listener's individual radio unit.

When the listener requests information stored in the memory of the listener's individual radio unit, the specified information is retrieved ("On-Demand Delivery"). If audible data has been stored in a compressed form, the audible data is decompressed. If digital data, with non-



1 audible attributes has been stored, the data is converted into audible information through the use  
of a speech synthesizer. The resulting audible data is then delivered through the ODR radio's  
auditory speaker mechanism for the listener's individual reception.

5 According to one aspect of the invention, some or all of the information to be stored in  
the ODR unit is delivered in digital form. The digital form of the information is converted and  
stored in memory as an audio signal that will then be available to be recalled from the memory  
and output to the radio sound system in audio form. Alternatively, the digital form of the  
information is stored in memory, and at the time that the information is to be delivered in audible  
10 form, a lookup table is used to convert the digital information to audio signal form for delivery  
through the radio sound system. This aspect of the invention can be performed in combination  
with other forms of delivery and storage. This aspect of the invention saves memory and  
transmission requirements for regularly used words such as alphabetic, numerical, and common  
phrases, and names, such as those used in stock reports and traffic reports. The stored digital  
information will be used to look up the stored audio signal, and the corresponding stored audio  
15 segments of information will then be delivered to the user through the user's radio sound system.  
In one embodiment of the invention, the digital information is also delivered to the user by  
displaying the digital information on, for instance, the LCD display of the user's radio device.

It is not a limitation of this invention that any or all of the data transmitted to, and/or  
received by, and/or stored in the radio unit can be converted to audible data. In an alternative  
20 embodiment of this invention, the display window of the radio can be used to display, in textual  
and/or graphic form, information to the user. In the embodiments of the present invention, that  
are integrated with palm computers, laptop computers and like devices, the present invention is  
capable of delivering programming and/or related information, such as, for example, advertising  
coupons, in the display feature of the mentioned-device. The present invention therefore,  
25 provides the ability to deliver the information to the user in audible, textual/graphical, and/or both  
forms of communication.

According to the present invention, many different types of information can be made  
available from which the listener/user can select ("On-Demand Content").

30 The following glossary of terms will be helpful in understanding the following  
description.

35

1 **Glossary of Terms**

	Story	A piece of news announcement, stock quote, sport score, or traffic information.
	Topic	A group of related stories.
	Category	Same as topic.
5	Play Sequence	The list of stories to play and the order in which to play them.
	Commercial	Commercial messages by advertisers that are played according to some scheduling strategy during interruptions in programming.
	Commercial Support Material	Detail material relating to a commercial, such as address of store, specification of products, abbreviated to CSM.
	Session	Each time a listener turns on On-Demand Radio.
	Message ID	The unique identification for each message. Messages can include news stories, traffic updates, and stock updates.
10	Hold Click	Holding down a navigational button for one second.
	Advertisements	Commercial messages by advertisers that are played as types of stories under an "Advertisement" Topic.

**DESCRIPTION OF THE DRAWINGS**

15 These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. 1a is a schematic diagram depicting one embodiment of an overview of the Broadcast System;

20 FIG. 1b is a schematic diagram depicting an alternative embodiment of an overview of the Broadcast System;

FIG. 2 is a graphical representation of one embodiment of the user Control Setup Specifications access and completion;

FIG. 3 is a conceptual diagram representing the information potentially maintained for each user/radio unit;

25 FIGS. 4 through 17 are graphical representations of one embodiment of an Internet website Control Set-up Specifications interface;

FIG. 4 is a graphical representation of an embodiment of a login screen;

FIG. 5 is a graphical representation of an embodiment of a metropolitan area designation screen;

30 FIG. 6 is a graphical representation of an embodiment of a Traffic screen for a typical metropolitan area;

FIG. 7 is a graphical representation of an embodiment of a custom commute route screen;

FIG. 8 is a graphical representation of an embodiment of a Stock selection screen that provides the user with the option of identifying major stock exchanges;

35 FIG. 9 is a graphical representation of an embodiment of a General News screen;

FIG. 10 is a graphical representation of an embodiment of a Business News screen;

FIG. 11 is a graphical representation of an embodiment of a Sports News screen;

FIG. 12 is a graphical representation of an embodiment of a Sports Score screen;



1           FIG. 13 is a graphical representation of an embodiment of an Entertainment News screen;

          FIG. 14 is a graphical representation of an embodiment of a Science News screen;

          FIG. 15 is a graphical representation of an embodiment of a Health News screen;

5           FIG. 16 is a graphical representation of an embodiment of a Travel News screen;

          FIG. 17 is a graphical representation of an embodiment of a Technology News screen;

          FIG. 18a is a flow diagram of one embodiment of the way in which narrowcasting is accomplished;

10           FIG. 18b is a flow diagram depicting one embodiment of the way in which In-Radio Profiles are established so that narrowcasting can be accomplished;

          FIG. 18c is a flow diagram of one embodiment of the way in which narrowcasting is accomplished using In-Unit Profile information;

          FIG. 18d is a block diagram of one embodiment of ODR Unit logic using In-Unit Profile information to store information matching the In-Unit Profile;

15           FIG. 18e is a flow diagram of an alternative embodiment of the way in which the user establishes an In-Unit Profile;

          FIG. 19a is a graphical representation of one embodiment of an On-Demand Radio unit apparatus;

20           FIG. 19b is a block diagram representing one embodiment of On-Demand Unit components;

          FIG. 20 is logic flow diagram depicting an exemplary logic flow of an exemplary embodiment of an ODR/GPS integrated device to deliver location centric advertising;

          FIG. 21a is a block diagram of one embodiment of an ODR unit depicting communications with multiple devices;

25           FIG. 21b is a block diagram of one embodiment of an ODR unit integrated with a GPS unit;

          FIG. 21c is a block diagram of one embodiment of an ODR unit capable of communicating with multiple devices;

30           FIG. 22 is a graphical representation of one embodiment of an ODR unit cradle for communications with a computer; and

          FIG. 23 is a graphical representation of one embodiment of the Radio Program Guide web page.

## DETAILED DESCRIPTION

### 35           A.     The Broadcast System

          According to the present invention, a broadcast delivery service is created (the "Broadcast System"). The function of the Broadcast System is to provide information to the individual listener's radio unit in which the individual listener is interested. That is, a radio Broadcast

1 System is provided, together with radio receivers that will allow listeners to selectively listen to news stories and other information of the listener's choice. Information will be made available with progressive levels of detail. FIG. 1a is a schematic diagram depicting one embodiment of an overview of the news collection and Broadcast System.

5 In one embodiment, individual radio and/or television stations and/or other news gathering services such as newspapers and/or news services (10) will be used to collect news data (20). Each participating news gathering service prepares basic news stories (30) and formats the news story in accordance with Broadcast System requirements (40). In one embodiment, the news gathering service edits each story (50) to add intelligence in the form of key words about the  
10 content of story. Content coding will be done in accordance with Broadcast System specifications. In one embodiment, each story will be constructed to consist of a summary (optional), a brief version of the story (optional), a detailed version of the story, certain keywords (e.g., sports, basketball, Lakers, Knicks) and other details such as version number (a story may evolve during the day and a second version may need to be sent) and time. In one embodiment,  
15 at each of the news gathering services mentioned above, a data inserter (60) will be installed to insert the data prepared by that news gathering service. In one embodiment, the data inserter is a PC based machine.

Each inserter receives news stories in the form of data files either by modem download (e.g. from a national center or from news services such as AP, Reuters, etc.), or by local input  
20 from the station staff.

In an alternative embodiment, a National Operational Center ("NOC") is established. FIG. 1b is a schematic diagram depicting an alternative embodiment of an overview of the Broadcast System in which an NOC is used to receive, prepare and transmit ODR information. In this embodiment, NOC is staffed with engineers, editors and announcers. For output, NOC  
25 will be linked by dedicated telephone line, satellite link or other communication to an FM station in each target city. An inserter will be provided to each FM station. Local news inputs to NOC can be provided in a variety of ways (10-30), including but not limited to: a) Dedicated telephone lines to local news radio stations; and/or b) telephone, electronic, satellite, and/or Internet links to local newspapers and/or to other news services, including news sources for world news,  
30 national news, business news, traffic, stocks, sports. Formatting and editing (40-50) will be performed at the NOC for final insertion (60) and broadcasting.

Stories are stored in the memory of the inserter and queued for broadcast. The queuing is dynamic and may change. Important late breaking stories and time-urgent information such as traffic may be moved up the queue at the control of the news editor of the station.

35 In one embodiment, the editor (such as the NOC editor, or a local news editor) will attach special coding to certain emergency information such as information regarding tornados, hurricanes, high-speed freeway chases, etc. The ODR unit will receive and recognize the specially coded messages and will deliver an "Alert" to the user. Alerts regarding such

1 emergency information are referred to as Standard Alerts. Alerts will be capable of interrupting  
ODR programming, and/or regular radio, e.g., AM and/or FM. Alerts can also be customized.  
For example, the user can request an Alert if a certain stock's price falls below a certain point or  
5 rises above a certain point. As another example, the user can receive traffic condition Alerts for  
the user's custom traffic route. Customized Alerts will carry the special interrupting code and  
will cause delivery immediately upon receipt. Standard Alerts and Customized Alerts are  
described more fully below.

Data may be broadcasted with existing technologies, such as FM Subsidiary  
Communications Authorization ("SCA") subcarrier, Radio Data System ("RDS"), Data Radio  
10 Channel ("DARC"), etc. Such technologies do not interfere with the station conducting its  
regular broadcast business. Currently, SCA and RDS are capable of about 600-2400 bits-per-  
second (bps) data rates. For the preferred embodiment, a subcarrier using the FM subcarrier  
Information Service (FMSS) format will transmit unformatted, uncorrected data at a rate of  
approximately 16 kbps. Depending upon the signal condition and amount of error correction  
15 needed, the actual usable rate will be approximately 8 kbps to 10 kbps. Alternatively, a full FM  
or AM station may be devoted to data broadcast, provided FCC approval is obtained. Any other  
means of wireless communication can be used, including but not limited to: digital radio  
broadcast, digital television broadcast, and/or the vertical blanking interval of analog television  
broadcasts (VBI).

20 In an alternative embodiment, or in combination with the above embodiment, news stories  
are received in audible form and are stored as voice files in the inserter. The stories are  
"formatted" using voice commands by the news editor; key words are added verbally. Similarly,  
news stories received in text can be read by the news gathering service or Broadcast System  
editors and stored as voice files in the inserter.

25 In one embodiment, new stories are broadcast by the Broadcast System in voice  
throughout the day. According to this aspect of the invention, the Broadcast System acts like a  
typical radio station, i.e., a normal radio tuned to this station will have access to all stories  
transmitted. Each news story is broadcast with a header that precedes, or is attached to the story  
in the broadcast signal. The header can be heard as a short audio "blip." The audio "blip" is  
30 actually the data header that contains intelligence about the particular news story. For instance,  
the header will contain several bytes of information indicating, for instance, the category, sub-  
category, version number, etc. for the particular news story. For example, the header may contain  
coding that indicates that the following story is a story about "Sports-basketball-Lakers."  
Alternatively, information in the header may be sent by SCA subcarrier or RDS instead of an  
35 audible "blip".

1

In another alternative embodiment, voice files are transmitted in compressed voice data form. In one embodiment, some portion, up to and including all, of the information that is broadcast by the Broadcast System is encrypted prior to transmission.

5

In the preferred embodiment of the invention, a specially constructed radio receiver will be built into the individual listener's radio unit (an On-Demand Radio ("ODR") radio unit), for instance, the listener's car radio or Walkman-type radio. The built-in receiver provides a memory and voice reproduction and/or synthesis circuitry.

10

In another embodiment, a standalone ODR unit is built to accompany the listener's radio unit. The standalone unit provides a receiver, memory, microprocessor, and voice reproduction circuitry and/or voice synthesis circuitry. The standalone unit can be in the form of including, but not limited to: a) an integrated audio-cassette unit where the electronics are built inside an audio-cassette casing with a face panel attached to the casing; b) a standalone unit with audio-cassette tape player adapter or, c) standalone radio frequency rebroadcast interface. In the case of an integrated audio-cassette unit or a standalone unit with audio-cassette tape player interface, the audio-cassette unit or audio-cassette adapter would be plugged into the audio-cassette player of the individual listener's radio unit in order for the information to be played in an audible form.

15

A standalone integrated audio-cassette unit could provide accessible hardware to the user in the form of specialized buttons on the face of the unit. In a Radio frequency rebroadcast interface embodiment, the user would tune, for instance, the FM radio to receive a particular FM frequency, as required by the rebroadcast interface; the FM rebroadcast interface will then rebroadcast the information to the radio unit. The rebroadcast can occur automatically and continuously, or can be initiated by the user for instance, by pressing a particular button on the standalone unit and/or on the radio unit. The above described embodiments of a standalone unit interface are exemplary only, and are not in any way a limitation of the present invention.

20

As is described in more detail below and as depicted in FIG. 21a, both the ODR radio unit embodiment and the ODR standalone (1300) unit embodiment can communicate with many types of devices, including, but not limited to: different models of radios (1310), cassette players (1320), C/D players (1330), a cellular telephone (1350), a Global Positioning System ("GPS") navigational system (1340), automobile computer system (1360), an automobile PC (1370), palm computer (1383), hand-held computer (1380), laptop computer (1381) and/or desktop computer (1382). FIG. 21b is a block diagram of one embodiment of an ODR unit capable of communicating with multiple devices. The embodiment depicted in FIG. 21c represents an automobile network embodiment. FIG. 21b is a block diagram of one embodiment of an ODR unit integrated with a GPS unit (330).

30

35

In one embodiment of the ODR unit, as graphically depicted in FIG. 22, a cradle (1420) is provided that can be connected to a computer (1380-1383). The ODR unit can be placed in and connected to, the cradle. When connected to the cradle, the ODR unit can receive and/or

1 transmit information to the computer and/or a computer network (1400) such as the Internet. In one embodiment, music in digital format, such as MP3 (Motion Picture Expert Group ("MPEG") 1 layer 3) format, can be downloaded from a computer and/or a computer network such as the Internet to the ODR unit when the ODR unit is connected to the cradle.

5 B. Control Setup Specifications

According to the present invention, one or more mechanisms are provided by which the individual radio listener identifies the radio listener's individual radio unit, personal interests, personal preferences and individualized settings and options ("Control Set-up Specifications").

10 According to the present invention, many types of information available for On-Demand Radio delivery are categorized into different areas of interest. These categories are made available to the user. In the preferred embodiment, the categories are available to the user through an information network, such as the Internet, and specifically through a particular web site and/or through a number of web sites to which the user can access at any time.

15 Due to the vast amount of information available in broadcast information, the user is asked to define a personal profile and/or set of preferences, referred to herein as Control Set-up Specifications.

20 In one embodiment, the user's Control Setup Specifications are used by the central Broadcast System to identify information for that particular user's radio unit such that only the preferred information is downloaded from the central Broadcast System information center to the user.

In an alternative embodiment, the user's Control Setup Specifications are broadcast to the user's individual unit where the information is received and installed. In one embodiment, the Broadcast System broadcasts the user's Control Setup Specifications each time the user updates the user's Control Setup Specifications.

25 In another embodiment, the user enters Control Setup Specifications in a palm computer, laptop computer, or other similar device, and then transmits the Control Setup Specification information to the ODR unit. Transmission of Control Setup Specification information to the ODR unit can be done in various ways, including but not limited to using an infra-red device with an infra-red transceiver in the ODR. In another embodiment, the user enters Control Setup Specifications directly into the ODR unit using existing dials and/or buttons on the faceplate of the ODR unit.

30 In the preferred embodiment, the types of information that is available for On-Demand Radio delivery are identified in a web site which can be browsed by the user. FIGS. 4 through 17 are graphical representations of one embodiment of an Internet web site user Customizer for On-Demand Radio ("ODR"). The Internet web site user Customizer embodiment depicted in FIGS. 4 through 17 provides a typical Control Set-up Specifications interface.

35 The types of information, referred to here as "topics," identified in a typical web site embodiment of a Customizer include, but are not limited to: news, sport scores, financial results,



1 weather, and other special interests. Topics are divided into categories, referred to here as  
"subtopics," in several levels, as appropriate for the particular category. For example, the Sports  
topic can be further divided into subtopics of golf, tennis, football, etc. The football subtopic can  
then be further subdivided into college and professional.

5 In one embodiment, as depicted in FIG. 2, the user/listener (100) accesses the information  
topics (140) through an Internet web site using, for instance, a desktop terminal or portable  
computer 120. The user/listener is then asked to complete one or more online screens (110)  
requesting information about the user, the user's unit, and the user's interests and preferences.

10 The types of personal information collected includes, but is not limited to: radio unit  
Identification Number ("ID"), name (may be optional), address (may be optional), zip code,  
specific stocks of interest, commute route, commute time, sports categories, sports teams, product  
categories and the order of priority in which the user would prefer to hear information concerning  
the above-described types of information.

15 The types of preference information collected includes, but is not limited to a survey of  
interest levels, including but not limited to levels such as no interest, low interest, moderate  
interest, high interest, for such topics including, but not limited to general news topics such as  
world news, U.S. news, local news, and business news topics such as industry news, money and  
investing, world trade, managing people, etc.

1) Web-based Customizer

20 In one embodiment, the Customizer is a web-based program which produces a Filter.DAT  
data file which is described further in a following section of this application. The Filter.DAT file  
becomes the user's Control Set-up Specifications. One embodiment of the Customizer is  
described below.

a. Default Filter.DAT

25 In one embodiment, the Customizer does not automatically generate a default Filter.DAT.  
If a listener does not complete all necessary operations to the end, no file is generated. When it  
comes time to make or modify the default version of Filter.DAT, a person uses the Customizer  
to create a version of Filter.DAT, which is then used as a default.

b. Set-up Screens

30 The user is asked to supply certain first time set-up information that the Customizer needs  
to open an account, i.e., account name, password, product serial number, and personal  
demographics information.

c. Logging In

35 An opening screen asks the listener for an account name. The system will check for the  
content for format of the input. FIG. 4 is a graphical representation of an embodiment of a login  
screen.



1       Next the listener is asked to identify his/her geographical location. FIG. 5 is a graphical representation of an embodiment of a metropolitan area designation screen. The following list of regions is exemplary and is by no way a limiting feature of this invention.

5

<i>San Francisco Bay Area</i>
<i>Los Angeles Area</i>

10

In one embodiment, in order for a listener to access the web page, the listener must have the serial number of this radio. On the sign-on screen, the web page asks for the serial number. If this is the first time the radio is registered, the web page asks the listener to create a sign-on name and a password. From then on, each time the listener accesses the web site, he will be asked both the sign-on name and the password.

15

The web page also asks the listener for an e-mail address. In the future, if the listener forgets his password, he can request the web page to email the password to the designated email address.

20

Each ODR unit has a unique serial number. Furthermore, the serial number is made-up in a way such that there will be one or more checksum digits. All serial numbers, when combined with one or more checksum digits, add up to a unique number. This prevents a vandal from entering random numbers and manipulating other people's configurations.

Below are descriptions of functions that can be customized in a typical embodiment of the invention.

d.       Enabling or Disabling Automatic Start

25

The web page presents the option to choose between "Enable Auto Start" and "Disable Auto Start". Selecting "Enable Auto Start" allows the radio to automatically begin playing On-Demand Radio when it is turned on, even if the radio has been left in the AM or FM setting. Selecting "Disable Auto Start" does not allow the radio to automatically begin playing On-Demand Radio when it is turned on.

e.       Including and Excluding Topics

30

A listener can customize whether he wants to have a certain topic included in his play list. On the web page, all the possible topics are listed. The listener simply clicks on the topics that he is interested in and un-click the topics that he is not. In one embodiment, traffic and top news are standard topics and cannot be removed. If customization is not done, the default play list, in a typical embodiment, includes all of the following topics in the specified sequence.

35

Default Play List	
	Traffic Update
	Stocks
	Top Stories
	General News
	Sports News
	Entertainment News
	Sport scores
	Advertisements
	Radio

In an alternative embodiment, the Customizer will allow the user to select from multiple pre-set default patterns of interests and preferences. If the user selects one of the pre-set default patterns, that pattern becomes the user's profile. In a typical embodiment, the pre-set default patterns control the selections for the Play List as well as any and/or all other user-customizable sets of information. As an example, the user could select a "Business Person's Profile." The Business Person's Profile would reflect selections in the Play List and the other user-customizable sets of information that are of interest to a typical business person. Other patterns available include but are not limited to: Student, Housewife, Engineer, Salesperson, Sports Fan, etc.

The following list of topics and the associated descriptions is exemplary and is by no way a limiting feature of this invention. Below, some of the topic areas, namely Traffic, Advertisements and Radio, identified in the following table is described in greater detail.

Traffic Update	Traffic congestion updates.
Stock Quotes	Pricing info on listener-selected stocks.
Top News Stories	This is a collection of the day's important news, much like the front page of a newspaper.
General News	Includes world, national, and local news.
Business News	Business news category includes news relating to commerce and economics.
Sports News	Sports news includes news relating to professional sports teams, sports personnel, and detail coverage of events such as the Olympics and major games.
Entertainment	News about movies, TV, theaters, etc.
Sports scores	Sports scores on listener-selected teams.
Advertisements	Advertisements, for instance regarding certain products, and/or sales for certain types of products.
Radio	Radio typically relates radio stations based on the format of each station, e.g., Country-Western, Fifties, Pop, Hard Rock, etc.

1

f. Selecting the Sequence of Topics

5

Once a listener has selected the topics of interest, the listener is asked to define the sequence in which the topics are to be played if there is no listener intervention. In a typical web site embodiment, a list of the selected topics is displayed. For each topic, the listener can click on the up or down arrow, which moves the topic forward and backward in the play sequence. A typical default play sequence is displayed in the table below:

10

Default Play Sequence of Topics	
	Traffic
	Stocks
	Sports Scores
	News
	Magazines
	Radio
	Radio shows
	Advertisements

15

20

In one embodiment, each topic is displayed with a small input box next to it; the listener enters a number into each box to represent the order in which the topic is played. In another embodiment, the user is given the opportunity to click and drag topics to the play order.

g. Traffic

The Customizer allows the listener to define a customized traffic report.

25

In a typical web site embodiment, the web site presents a number of cosmopolitan areas, such as Los Angeles or the San Francisco Bay Area, for the listener to choose from. FIG. 6 is a graphical representation of an embodiment of a Traffic screen for a typical metropolitan area, which in depicted example is the Los Angeles area.

30

A typical web site embodiment also presents an option to define custom commute routes and/or often-traveled routes. The web site shows a map of the major highways and boulevards and the locations of the speed sensors. In one embodiment, the listener clicks on the "Define New Route" button and then drags a pointer through the highway and streets that he frequents. In another embodiment, the listener clicks on the segments of the freeways on which the listener commutes. In another embodiment, the listener is asked to provide a beginning-of-commute address and an end-of-commute address. The listener then identifies whether he travels on the route one-way or both ways by clicking on the appropriate box. Once a route is defined, On-Demand Radio will report traffic speed and congestion on specified directions of the route.

35

1 Along the route there may be stretches of highways or streets where traffic sensors are not present. In one embodiment, on the website's customization map, the sensors are clearly marked, so he can see where the sensors are missing along his route. When new sensors are installed after the listener has defined his route, they are automatically included in the group used for reporting.

5 The following list of locations for the San Francisco Bay Area is exemplary and is by no way a limiting feature of this invention.

Northbound Hwy 101 @ Hwy 880
Southbound Hwy 101 @ Hwy 880
Northbound Hwy 101 @ Great America Parkway
Southbound Hwy 101 @ Great America Parkway
Northbound Hwy 880 @ Brokaw Road
Southbound Hwy 880 @ Brokaw Road
Northbound Hwy 680 @ Capitol Ave.
Southbound Hwy 680 @ Capitol Ave.
Eastbound Hwy 237 @ Calaveras Blvd.
Westbound Hwy 237 @ Calaveras Blvd.

#### 1.) Customized Traffic Routes

In an embodiment that provides for user definition of customized traffic routes, the listener defines the listener's custom routes on the Customizer web site. FIG. 7 is a graphical representation of an embodiment of a custom commute route screen. A listener tells the Customizer what freeways the listener travels regularly. The listener defines the beginning and end locations of the commute on each freeway. The listener further defines the time block in which he will be traveling on this route. The listener also defines what days of the week he travels on this route. In a typical embodiment, the resulting data is written to Filter.dat which is a control file described more fully below.

25 In one embodiment, the ODR unit is integrated with a cellular telephone and/or a GPS system. In such an embodiment, the approximate location of the user can be deduced in the case of a cellular telephone, and can be identified with some specificity in the case of a GPS system. In the case of an ODR/GPS unit, the system knows the direction in which the user is traveling. In such a cell-phone/GPS integrated ODR system embodiment, the ODR system learns the user's routes. The user can optionally setup custom commute routes as described above and the ODR system will play traffic conditions for routes defined by the user as a custom commute route. In addition, the cell-phone/GPS integrated ODR system will play traffic conditions for routes over which the ODR system deduces that the user is traveling. Still further, the cell-phone/GPS integrated ODR system has an electronic calendar/clock and recognizes minutes, hours, days, weeks, months, etc. Using its electronic calendar/clock, the cell-phone/GPS integrated ODR system learns the routes that a user repeatedly travels and the time of day and calendar schedule when the user travels the particular routes. Once the GPS/ODR detects a regular pattern, it can notify the user of traffic congestion on the route, at a specific time and/or during a certain range

1 of time, such as during the listener's typical commute time. These notifications are available  
under the Traffic topic. In one embodiment, the user is given the option of requesting that such  
traffic notifications be delivered as a Traffic Alert that interrupts normal AM/FM radio  
programming and interrupts ODR programming. In one embodiment, when congestion messages  
5 are delivered to the user, a detour is also provided. In one embodiment, traffic congestion  
messages and detours are broadcast by the Broadcast System and delivered in voice form. In a  
GPS/ODR unit embodiment, detours are also delivered in graphical form and are displayed on  
the GPS system monitor, such as in map form.

10 Traffic congestion information is sent in Broadcast data. The data records include but are  
not limited to: the freeway name, the direction, and the specific location of the congestion. The  
microprocessor in the ODR unit is programmed to compare traffic records in the Broadcast data  
against traffic records in Filter.dat, and against the ODR unit's internal clock to decide if the  
specific congestion information should be played to the listener. In one embodiment, when there  
is no congestion on the custom route, no voice files are played.

15 For example, on a particular weekday morning, a few congested areas of freeways on a  
listener's customized route to work are identified and are broadcast by the Broadcast System.  
The ODR unit plays voice files to describe the congestion on the customized route depending  
upon the listener's customized route setup. For instance:

20 "There is congestion on your way to work - Northbound Highway 101 is stopped at  
Lawrence Expressway; Westbound Highway 380 is stopped at El Camino Real."

On a Sunday morning, a few congested areas of freeways on a customized route to church are  
identified and broadcast by the Broadcast System. The ODR unit plays voice files to describe  
the congestion on the customized route. For instance:

25 "There is congestion on your way to church - Eastbound Highway 237 is stopped at Great  
America Parkway."

## 2.) Customizer Options to Setup Custom Traffic Routes

In a typical embodiment of the invention, the Customizer gathers the following  
information concerning custom traffic routes:

30 **Name of custom route:** The listener picks a name for the custom commute route  
from a selection of names. The following list is an  
example.

35 To Work  
To School  
To Home  
To Church  
To Weekly Recreational Event

- 1 To Weekend Activities  
Custom Route 1  
Custom Route 2
- 5 **Time:** The listener picks the approximate time of day when the conditions on this custom route should be played. The following list of options is an example.
- Morning – 5 to 10 (military time)  
Afternoon – 15 to 20  
10 Night – 20 to 5  
All times – 0 to 24
- Day of week:** The listener picks the days of week when the condition on this custom route should be played. In one embodiment, the days are written as  
15 MTWHFSX where:
- M – Monday  
T – Tuesday  
W – Wednesday  
20 H – Thursday  
F – Friday  
S – Saturday  
X – Sunday
- 25 The Customizer allows the following choices for the listener:
- Weekdays – MTWHF  
Weekends – SX  
Everyday – MTWHFSX  
30 Monday – M  
Tuesday – T  
Wednesday – W  
Thursday – H  
Friday – F  
35 Saturday – S  
Sunday – X



1                   **Highway selection:**   The listener picks out segments of highways on which the user  
typically travels from a map by clicking on the segment. In  
another embodiment, the user enters the freeway ingress and  
egress (exit numbers) that the user typically uses. Concurrent  
5                   with the listener's choices, the list of highway segments entered  
up to that point is displayed in graphics form.

**From location:** The listener identifies where on a highway the listener's trip starts.

**To location:** The listener identifies where on a highway the listener's trip ends.

**Edit:** The listener can use this feature to edit a previously defined custom route. The listener can change all aspects of the route.

#### h. Advertisements

In one embodiment, the user is given the opportunity to indicate interest in Advertisements that relate to certain subtopics of information and/or products. Below is a sample list of advertising subtopics from which a user could select. For each advertising subtopic, the Interest Level choices described above are available. Furthermore, in one embodiment, the user is given the option of specifying geographical location/boundaries for stores that advertise products and/or service for which the user has indicated some interest. If the user does not specify geographical location restrictions, the system will default to restricting locations within a certain radius of the user's zip code, for instance, 20 miles. In one embodiment, the user is given the option of restricting receipt of Advertisements to particular brand name and/or types stores. The following list of Advertising subtopics is exemplary and is by no way a limiting feature of this invention.

1

5

10

15

Beauty
Electronics
Small Appliances
Large Appliances
New Cars
Used Cars
Women's Clothing
Men's Clothing
Women's Shoes
Men's Shoes
Children's Clothing
Children's Shoes
Toys
Pet Products
Yard Equipment
Gardening
Hardware
Automobile Products
Furniture
Groceries

20 In one embodiment, the user's indication of interest in particular advertisement subtopics is used to target scheduling of Commercials. That is, if the user specifies high interest in Beauty-related advertisements, then the system will receive with priority Beauty-related commercials and/or will prioritize Beauty-related commercials in the timing and/or frequency and/or the amount of detail provided of these commercials.

25 In one embodiment, the user is given the option of requesting Commercial Alerts. Commercial Alerts are similar in function to Stock Alerts. The user can specify a particular Store, product, or other commercial basis. The user can specify a particular threshold price for which the user wants to be alerted. For example, the user is in the market for a new car of a particular model. The user can specify the model of car for which the user is looking. The user can specify a particular price for the car. The user can request that the user be notified of car dealers that offer  
30 the specified model for a price at or less than the threshold price. In an ODR/GPS embodiment providing Commercial Alerts, the ODR/GPS system can provide the user with complete directions to the price breaking dealership.

35 In one ODR/GPS embodiment, a voice-formatted and/or text-formatted and/or graphical formatted and/or video-formatted TourGuide/ShoppingGuide ("Guide") is provided. In TourGuide mode, the TourGuide/ShoppingGuide provides the user with tour guide informative and/or entertaining narrative of route through which and the locations in which the user is traveling. For instance, a TourGuide/ShoppingGuide function installed in a rental car rented by a tourist in Los Angeles would provide the driver with information about the architectural and

1 historic significance of buildings and sites around the city. The TourGuide would describe the  
homes of the stars as the driver travels through Beverly Hills. In ShoppingGuide mode, the unit  
describes the merchandise and sales in the stores as the driver travels through Rodeo Drive and  
describes the restaurants, ratings, and menus of eating establishments as the user travels through  
5 Santa Monica. In one embodiment, the TourGuide/Shopping Guide data is transmitted  
wirelessly by the Broadcast System, and is received by individual ODR units. In another  
embodiment, the TourGuide/ShoppingGuide data is provided through some other form of media,  
including but not limited to CD, CD-ROM, DVD, data card, and/or infra-red transmission. The  
above description of different modes of operation is not a limitation of the invention. Rather, the  
10 user can choose to limit the TourGuide/ShoppingGuide to a single mode or can allow, in the  
alternative, for the Guide to provide full functionality.

q. Radio

According to the present invention, the Radio topic provides a new way for listeners to access  
15 their favorite types of music on the radio. The Radio topic provides relational descriptions of  
subtopics for radio stations with like themes or formats. The Radio Topic is subdivided into  
subtopics which are available for the listener's selection. For each Radio subtopic, the Interest  
Level choices described above are available. In another embodiment, the user is able to choose  
specific music and/or talk formats. When the Control Setup Specification is downloaded into  
20 the user's ODR unit, radio stations are available as items in the Radio topic; the stations are  
grouped according to specific music/station formats. In yet another embodiment, the user is  
given the option, in the Web Customizer and/or at the ODR unit, to select particular Radio  
stations for inclusion as Radio subtopics. The user can further customize the Radio topic to  
include particular stations under particular music and/or talk format groupings. The following  
25 list of Radio subtopics is exemplary and is by no way a limiting feature of this invention. In  
defining Control Set-up Specifications, the listener can prescribe the order in which the Radio  
subtopics are organized, and therefore the order in which the Radio subtopics will be played  
under the Radio topic. When the user is in the ODR mode for the user's ODR unit, the user can  
rearrange the order as is described in the sections below.

30	Country-Western
	Fifties
	Pop
	Hard Rock
	Jazz
	Classical
35	Rhythm & Blues

The Radio topic works in the following way. Once the listener is using the ODR unit in the  
ODR or NEWS mode, when the Radio topic programming begins, the ODR unit announces the  
first sub-topic name, e.g., Country-Western and then begins immediately to play music from the

1 first station to which that sub-topic refers. If the listener likes the Country-Western subtopic, but  
prefers to listen to another station under that topic, the listener can interrupt the programming and  
skip to the next available station to which that subtopic refers by pressing a faceplate button, e.g.,  
FORWARD, once. If the listener does not want to continue listening to Country-Western and  
5 wants to go to the next sub-topic, e.g., Fifties, the listener presses a faceplate button, e.g., NEXT  
SECTION, once.

i. Radio Program Guide

10 According to the present invention, the Radio Show topic provides a way for the user to view,  
choose, and instruct the user's ODR unit to record one or more radio programs broadcasted by  
regular AM and/or FM radio stations. When a user selects the Radio Program Guide web page,  
the user is presented with a list of radio programs that are broadcast during specific times of the  
day or week. In one embodiment, the Radio Program Guide web page displays a list of radio  
stations; for each radio station, the web page provides a corresponding page listing the programs  
15 and schedule of the programs available for that radio station. FIG. 23 is a graphical representation  
of one embodiment of a Radio Program Guide web page for a particular radio station. The user  
is provided the capability to choose one or more of the listed programs for automatic recording  
by the user's ODR unit. For each radio show selected for recording, the user is asked to specify  
whether the user wants the ODR unit to record the program once, or on some regular basis. Once  
20 the user completes making recording selections, the website processes the information and  
delivers the user's selections to the Broadcast System. The Broadcast System prepares the  
selections and delivers the selections to the user's ODR unit with a header addressed to the  
particular user's ODR unit. The user's ODR unit recognizes the header and receives and stores  
the selections in memory in the ODR unit. Further, the ODR unit uses the stored selection  
25 information to set up, as appropriate, a recording schedule for the selected shows. At the  
appointed scheduled time and for the appropriate duration of time, the ODR unit tunes to the  
appropriate AM or FM frequency, digitizes the voice data of the selected AM or FM radio show,  
and stores the digitized voice data in memory. The user can then play the recorded show (s) by  
using ODR unit buttons and/or voice commands.

30 The above-described Internet web site is an exemplary embodiment and is not meant in any  
way to be a limiting feature of this invention. Rather, there are many ways in which the user can  
specify the requested information, including but not limited to: a) User completion of a telephone  
survey and questionnaire conducted for the Broadcast System; b) a hardcopy survey and  
questionnaire that is submitted by mail or facsimile to the Broadcast System center.

35 FIG. 18e is a flow diagram of an alternative embodiment of the way in which the user  
establishes an In-Unit Profile. In FIG. 18e, the user installs setup software in the users personal  
computer (701), a palm computer, handheld computer, laptop computer, auto PC or like device  
is used to set-up the user's Control Setup Specifications. Unlike the above Internet and survey

1       embodiments, the palm computer, handheld computer, laptop computer, auto PC or like device  
embodiment is used to set-up the user specifications (702) and transmit them directly to the ODR  
unit (703); the computer device communicates In-Unit Profile information to the ODR device  
through, e.g., an infrared transceiver (FIG. 19a, (1240)) in the ODR device. A number of other  
5       ways to communicate the information from the personal computer to the ODR unit can be used  
and the description of an infrared transceiver as the receiving component is exemplary and is not  
in any way meant as a limitation of the invention. The ODR unit receives the In-Unit Profile  
(704) and stores the information (704) in memory (210).

10       In one embodiment, an interface device is provided for transferring data from the computer to  
an audio cassette compatible device and/or to some other media device, including but not limited  
to: CD, CD-ROM, DVD, data card or like device. In this embodiment, the user would carry the  
interface device to the user's car cassette or like device (as described above) player for outputting  
the information.

15       The ODR device can also be integrated with a cellular phone such that the combination of the  
ODR device and the cellular phone is a standalone device. The entire ODR system can also be  
integrated into the car's sound system, cellular phone system, a GPS navigational system,  
automobile computer, and/or any combination of these devices.

20       In a system that includes integrated ODR and cellular phone elements, paging and e-mail  
capabilities are provided. The cellular phone element provides the capability to establish a  
backlink to a centralized network, such as, but not limited to, the Internet is provided. The user  
can access e-mail and pager messages. In one embodiment, e-mail and pager messages are  
delivered by the Broadcast system to the ODR unit. The ODR unit selects the e-mail and pager  
messages addressed to it. Alternatively, both directions of communication can be carried out  
25       using the cellular phone component. In one embodiment, e-mail and pager messages are  
delivered to the user in voice format. In one embodiment, the user can respond to e-mail and  
pager messages using voice commands to the ODR unit interface.

30       In one embodiment of the invention, the user maintains the user's calendar, scheduling  
appointments, and address book on a computer that communicates with a computer network such  
as the Internet. In another embodiment, the user keeps the user's scheduling appointments and  
address book on one or more websites. The user requests the Internet to transmit the user's  
calendar, scheduling appointments, and address book to the Broadcast System, which in turn  
addresses (using a header) the calendar, scheduling appointments, and address book to the user's  
ODR unit. The ODR unit downloads the calendar, scheduling appointments, and address book  
35       addressed to it and stores the information in memory. The ODR unit can perform a broad range  
of Personal Secretary functions. For instance, the ODR unit delivers reminders of scheduled  
appointments and special events, such as, e.g., birthdays, anniversaries, etc. to the user according  
to a reminder schedule set up as part of the user's Control Setup Specifications. For instance, the



1 user can ask to be reminded of certain schedules on the day the scheduled event is to occur, two days prior to the scheduled event, etc. Reminders are delivered in different ways, according to the user's choice, including but not limited to: under a Reminder Topic; as Reminder Alerts.

5 In an ODR/GPS integrated embodiment with Personal Secretary functionality, the user can request that the ODR/GPS system to find the address of a person and provide directions to that person's location. For instance, the user can request the ODR/GPS system to "find Bob Smith;" the user has previously entered the name of Bob Smith as an individual in the user's address book. The user can make the request, e.g., verbally. The ODR unit looks up the name, Bob Smith in the ODR address book. The ODR unit interface provides Bob's address to the GPS  
10 element of the System. The GPS element of the system then charts a route to Bob's address for the user.

In a system that includes integrated ODR and cellular phone elements, a backlink to a centralized network, such as, but not limited to, the Internet is provided. Any data collected by the ODR system can then be transmitted to the centralized network ("backlink"), e.g., to a web  
15 site. Data collected by the ODR system includes, but is not limited to: Usage of the ODR system by the user; usage of the radio unit by the user, including but not limited to what music and/or radio stations the user listens to.; data collected from the GPS system including, but not limited to, what restaurants the user goes to, what businesses the user frequents, and other information that can be derived from data collected concerning where the user has been; and/or an automobile  
20 computer system, including, but not limited to, what kind of car the user drives; statistics about the car and the car's usage, etc.

In an alternative embodiment, one or more of the above-described elements, including, but not limited to: A radio, an ODR unit, a GPS navigational system, an automobile computer, a cellular  
25 telephone, an automobile PC, a handheld computer, laptop computer, palm computer, and similar devices remain as standalone units but communicate with the other elements of the system by means of wireless communications. In another embodiment of the invention, wired communications, such as an automobile network, ties communications of one or more of these various system elements. In a networked environment, the ODR is capable of using data provided by other elements of the network, as well as providing data and exerting control over  
30 the other elements of the network. In one embodiment, a user's profile as well as a database of businesses, including but not limited to restaurants, hotels, service stations, stores, etc., is downloaded from the ODR to the GPS, along with coded instructions directing the actions of the GPS with regarding the business location data.

35 In one ODR/GPS embodiment, LocationCentric Advertising is broadcast by the Broadcast System. The ODR/GPS unit recognizes the user's destination address selected using the ODR/GPS interface. From the destination address, the ODR/GPS unit deduces the type of



1 location to which the user is traveling. If the user is traveling to, for example, a mall, then the ODR/GPS unit will deliver LocationCentric Advertising for stores located in that particular mall. LocationCentric Advertising can further be stored in the GPS location database.

5 LocationCentric Advertising can be delivered to the user in a number of ways. One way in which the user receives LocationCentric Advertising is by choosing the Quick Access Button that controls the Advertising topic. One subtopic under the Advertising topic is "Sales at Destination." Skipping to the Sales at Destination subtopic, the user can receive information about sales for stores located at the user's chosen destination.

10 Another way in which LocationCentric Advertising is delivered is for the user to skip to a subtopic under the Advertising topic that pertains to the particular store or mall to which the user is traveling. Under this approach, the user would have preset the particular store and/or mall as an advertisement selection in setting up the users Control Setup Specifications.

15 Another way in which LocationCentric Advertising is delivered, as depicted in FIG. 20, is that the commercials delivered during ODR programming are customized according to the user's location. As depicted in FIG. 20, data transmitted over the radio frequency received by the ODR is extracted by the ODR 800. The ODR determines whether the extracted data is an advertisement 801. If the extracted data is not an advertisement, the ODR processes the extracted data according to the type of data and according to the user's profile information 802. If the  
20 extracted data is an advertisement, then the ODR uses the GPS interface 803 to determine the global positioning of the integrated ODR/GPS unit 804. Each advertisement, and each data segment of each advertisement, contains global positioning information. Using a GPS Area location database 805, the ODR unit compares the advertisement data global positioning information to the global position of the ODR unit to determine whether or not the ODR receiver is in the vicinity or area relevant to the area to which the advertisement pertains 806. Some  
25 advertisements contain a universal area indicator meaning that the advertisement should be delivered to all listeners regardless of the listener's/ODR's global positioning. If the listener/ODR unit is not in the area covered by the advertisement, the ODR processes the extracted data accordingly 802. If, on the other hand, the listener/ODR unit is in the area covered by the advertisement, then the ODR unit prepares the advertisement for delivery to the user/listener 807. Advertisements can contain audibly deliverable information, graphically  
30 deliverable information, textually deliverable information, or any combination. The ODR unit prepares the advertisement for delivery to the user/listener depending upon the delivery type(s) and delivers the advertisement through the appropriate circuitry of the ODR 807. In this way, ODR programming can reflect advertisements for stores that are, for instance, located at the next  
35 exit of the freeway on which the user/listener is traveling.

In the preferred embodiment, the user/listener initially sets up the user/listener's profile by selecting the categories of information provided by the Internet web site that the listener/user is

1 interested in receiving. FIG. 3 is a conceptual diagram representing the information potentially maintained for each user/radio unit.

5 User-specified options will include, among other things, allowing the user/listener to specify whether the data is to be downloaded at that instant, to set-up a schedule by which to have the information downloaded at another time, e.g. 5:00 am every morning and 4:00 pm every afternoon, or to download the information by user request.

10 In one embodiment, the ODR unit updates the In-unit Profile with information collected by, and/or deduced by, the ODR unit. The ODR unit collects information concerning the user. For instance, the ODR unit collects information concerning the user's usage of the ODR unit. The ODR unit collects information concerning the programs, types of music, types of stories, etc. to which the user listens. In an ODR/GPS embodiment, the ODR unit collects information about the routes that the user travels, the businesses at which the user stops, the speed at which the user travels, and any and all other information that the ODR unit can collect and/or deduce from the GPS element. Similarly, the ODR unit can collect and deduce many types of information from  
15 embodiments in which the ODR communicates with other intelligent devices, including but not limited to: an automobile PC, an automobile computer, and a cellular telephone.

C. On-Demand Narrowcasting

20 According to the present invention, certain or all aspects of the user's Control Set-up Specifications can be used by the Broadcast System to narrowcast information to the listener's individual radio unit ("On-Demand Narrowcasting"). In one embodiment, the Broadcast System constructs a header that contains information that targets one or more radio units. Targeting is accomplished, by, for instance, specifying, one or more unit identification ("ID") numbers. In the header, unit ID numbers can be specified individually, and/or by one or more ranges.

25 Other types of user Control Set-up Specification information can be specified in the header to target a particular broadcast. For instance, in one embodiment, the unit type can be specified in the header; information can then be narrowcast by unit type; unit type would be information that could be collected from the user and/or inferable from the unit ID. As another example, a particular zip code can be inserted in the header so that a particular set of information is transmitted to all units for which user's have specified that zip code.  
30

35 Furthermore, any information contained in, or which can be inferred from the user's Control Set-up Specification information can be specified in a header for purposes of targeted narrowcasting. For instance, the user-specified Interest Level choice can be used to determine whether or not to send the user a brief version or detailed version of a particular story. As an example, the Broadcast System would build a header for a detailed version of a story concerning IBM with appropriate codes for high interest/business news listeners; a header for a brief version of the same story would contain coding to indicate a lower level of interest for business news. If a particular user specified high interest for business news, then the user's ODR would find a

1 match with the header for the detailed IBM-related story. If a particular user specified a lower level of interest for business news, then the user's ODR would find a match with the header for the brief version of the IBM-related story.

5 In an alternative embodiment, the Broadcast System indicates that a particular detailed version of a story about IBM is a detailed business story. The receiver at the ODR unit will examine the user's preferences. If the user has indicated a high interest in business stories, then the ODR unit will receive the detailed story.

10 As another example of the way in which the user-specified Control Set-up Information is used, information concerning the user-specified custom commute route, as described in more detail below, can be used to target advertising information. As an example, the user specifies a commute route that ends at a particular address or area of a large metropolitan area ("end-of-commute location"). The Broadcast System can use that information to target narrowcast advertisements for, e.g., restaurants, shops, retailers, services, etc. that serve the vicinity of the user's end-of-commute location. To accomplish the targeting narrowcast in this particular  
15 example, the Broadcast System builds a header that contains one or more of the following: a) ID's for radio units that belong to users that have identified an end-of-commute in a particular area (areas can be defined according to, e.g., local mapping standards such as the Thomas Guides); b) an end-of-commute area ID; and/or c) the end-of-commute address designated by the user.

20 In one embodiment, the On-Demand Radio ("ODR") standalone device is integrated with a GPS navigational system and/or cellular telephone. In another embodiment, the ODR radio unit is integrated with a GPS navigational system and/or cellular telephone. In any GPS-integrated and/or cellular telephone-integrated embodiment of this invention, the GPS navigational system and/or cellular telephone will provide the system with the approximate location of the device.  
25 In the case of a cellular telephone, approximate location of the cellular telephone can be found by identifying the cellular telephone broadcast tower. Narrowcasting, based on the real-time location of the unit can then be accomplished. For instance, as the commuter travels on a particular interstate freeway, a particular restaurant located at the commuter's next exit off-ramp can target its advertisement to the approaching commuter. The restaurant's advertisement can  
30 be narrowcast by constructing a header that contains information concerning the particular restaurant's location.

35 One embodiment of the present invention provides that the radio unit contains more than one tuner. One advantage of using multiple tuners is that the total bandwidth is increased. In one multiple-tuner embodiment, there is a master broadcast frequency in which broadcasts in other frequencies are synchronized and/or linked. In the case of a radio unit with multiple tuners, the restaurant's location-tied header and associated advertisement is periodically broadcast on a continuous basis on a particular frequency. Such advertisements could be broadcast on, for

1 instance, a carousel of advertisements that are broadcast, and then rebroadcast according to the  
carousel schedule. When the commuter approaches the location, the radio unit interrupts current  
programming and announces the restaurant's advertisement before continuing current  
programming. If the user has been listening to a regular radio broadcast, the targeted advertising  
5 can be played as an overlay of the regular radio broadcast, for example, when the regular radio  
station is broadcasting/playing commercials, in which case, the regular broadcast will resume at  
the point where the interruption ceases. In another embodiment, the advertisement causes an  
interruption in the regular radio broadcast, and the unit continues to receive the information of  
the regular radio broadcast and uses buffer space and/or memory in which to store the interrupted  
10 broadcast. When the targeted advertising is completed, the unit returns to play the information  
that was stored in the buffer and/or memory. Various methods can be used to synchronize the  
interrupted and further real-time radio broadcasts. Similarly, if the user is listening to On-  
Demand Radio programming, the ODR programming can be interrupted to announce the targeted  
advertiser's commercial; alternatively, an advertisement can be scheduled to be delivered to the  
15 user as part of the ODR programming.

In one embodiment of the invention, the ODR system collects information from the GPS  
system, including such information as the restaurants, hotels, businesses, retail stores and other  
locations to which the user drives. The ODR/GPS collected data is then used to create a very  
20 detailed profile of information concerning the user. Advertisements can be targeted to elements  
of user profiles. For instance, if the user drives to a particular address that is a particular retail  
outlet for a well known chain of department stores, the ODR/GPS system records that  
information. Headers for advertisements for that department store chain will contain a code for  
users who frequently drive to retail outlet locations of that department store chain. The ODR  
device will see the header and will find a match between the header code for users who frequent  
25 the store locations and the user information collected by the ODR/GPS device. Accordingly, the  
ODR device will select the advertisement related to that header.

Other factors can be considered in targeting advertising in accordance with the above-described  
approach to narrowcasting. For instance, time of day, day of the week, season of the year, etc.  
30 can be used to target advertising.

In one embodiment, the ODR unit is integrated with the automobile's on-board computer. The  
ODR unit is capable of sensing, interpreting and storing information contained in, or which can  
be inferred from, the on-board computer and the data that is collected by that computer. In one  
embodiment, the ODR unit is integrated with both the automobile's on-board computer and a  
35 GPS navigational system and/or cellular phone. In the ODR-computer-GPS/cell phone  
embodiment, advertising can be targeted considering factors gathered from each of the system's  
components. For example, the odometer reading of the car combined with the current location  
of the car can be used to announce the location of a nearby fast lube advertiser. In one  
embodiment, the system is capable of determining the priority between multiple nearby fast lube



1 advertisers. Approaches to determining priority include but are not limited to: a) announcing the location of the highest paying advertiser fast lube shop; b) announcing the location of the nearest fast lube shop; or c) announcing the location of the lowest charging fast lube shop.

5 In one ODR-GPS integrated embodiment of the invention, the ODR receiver is used to receive GPS database updates and/or corrections. For instance, roadblock, construction, route-specific information will be transmitted by the Broadcast System. Similarly, new information concerning hotels, restaurants, retail shopping and other information maintained in the GPS database will be transmitted by the Broadcast System. The ODR-GPS unit will receive the information, and will update the GPS database. Such information updates can be broadcast whenever updates  
10 become available and/or on some periodic basis, such as daily, weekly, or monthly. In one embodiment, the updates are broadcast as soon as the information is received and are rebroadcast on a periodic basis. In a multiple tuner embodiment, the ODR-GPS unit continuously receives and applies the updates as they become available.

15 According to this aspect of the invention, the Control Set-up Specifications can be specifically narrowcast for reception by the particular user's individual radio unit, which is a process referred to herein as "On-Demand Narrowcasting." According to this aspect of the invention, "On-Demand Narrowcasting" means that the information is broadcast over the standard frequency, but is coded so that only a single unit, or a subsection of the total population of radio units, are identified in the header for the information. Accordingly, only a single ODR unit, or a subsection  
20 of the total population of ODR units, will select and capture the information because the information contains, or is preceded by, a header containing that particular unit's ID, or the particular unit's ID falls within one of the ranges specified in the header.

FIG. 18a is a graphical representation of one embodiment of the procedure by which On-Demand Narrowcasting is accomplished. In the depicted embodiment, for each news story, the  
25 database of Unit/User Control Set-up Specifications (1000) in the National Operating Center ("NOC") is searched. Comparisons are made (1030) between the keywords (1020) contained as part of the news story format (1010) and interests and/or preferences for each unit/user (1080). Matches (1040) between the keywords for a particular story and the profile of interests for a particular unit/user cause a header for the story to be constructed (1050) containing the unit ID for the matched unit (1060). The header is then transmitted prior to, or as part of, the news story (1070). In another embodiment, the database of all Units/User Control Setup Specifications in a particular geographical region is searched for matches between the story and the preferences of the listeners. A popularity index of the story is generated based on the analysis of the  
30 database. The popularity index of several stories are then compared to identify the more popular stories; the more popular stories are then broadcast.

In an alternative embodiment, "narrowcasting" is accomplished by broadcasting everything for analysis by each ODR unit. FIG. 18b is a flow diagram depicting one embodiment of the way

1 in which In-Radio Profiles are established so that "narrowcasting" can be accomplished. In FIG.  
18b, the user inputs personal information and information concerning the user's interests and  
preferences (100-130), using for example, user-interface setup screens on a website. The user's  
information is stored in memory along with the information for other users (1000), e.g., at the  
5 Broadcast System's NOC. The NOC Broadcast System then builds one or more records  
containing each user's information (200). Each user's record contains the unit ID to which the  
user information is targeted. The collection of one or more records for the same ODR Unit ID  
is called a Profile. The Broadcast System then transmits the user's information (202). The  
individual ODR unit receives all transmitted Profile information, but only extracts the  
10 information containing the ODR unit ID for storage in the memory of the ODR unit (204). Once  
the Profile has been stored in the memory of the ODR unit, it is referred to as an In-Unit Profile.

FIG. 18c is a flow diagram of one embodiment of the way in which "narrowcasting" is  
accomplished using In-Unit Profile information. The ODR unit receives all ODR header  
information transmitted to it as Broadcast Signal (250). If the header is for a standard Alert, the  
15 ODR unit receives the Alert and prepares the Alert for delivery to the user (252-253). If the  
header is not for a standard Alert, then the ODR unit analyzes the header information by  
comparing the header to the information in the In-Unit Profile (255). When the ODR unit  
identifies that a header is consistent with the In-Unit Profile (256), the unit extracts the related  
information (story, advertisement, commercial, update, alert, etc.) and stores (256) the  
20 information in the memory (210) of the ODR unit for later playback.

FIG. 18d is a block diagram of one embodiment of ODR Unit logic using In-Unit Profile  
information to store information matching the In-Unit Profile. In FIG. 18d, the Receiver (300)  
receives the Broadcast Signal (1072). The User Profile in memory (210) is used by the ODR unit  
to determine what information to receive and store in memory (210) for later playback through  
25 the Player (310). The Player (310) uses the User Profile in memory (210) to determine what  
information to play and in what sequence.

On-Demand Narrowcasting a particular user's Control Set-up Specifications is meant as an  
exemplary embodiment of the invention and is not meant in any way to be a limiting feature of  
30 the invention. Rather, other types of information can be specifically targeted by unit ID and/or  
one or more ranges of unit ID's.

In the preferred embodiment, the Internet, including but not limited to, the online web pages  
completed by the user specifying the user's Set-up Control Specifications, e-mail, and custom-  
purpose program, are used to control the functions of the Preferred Radio device -- a device  
35 which is not directly connected to the Internet.

Applications of this aspect of the invention are not limited to controlling the On-Demand  
Radio. Rather, this aspect of the invention can be used to control the configuration of many types  
of devices, including, but not limited to, inexpensive household or mobile appliances. This



1 aspect of the invention is particularly useful for controlling the configuration of devices that tend  
to be located in diverse locations and that may not be attached to an electrical outlet and/or  
computer network. The configuration changes in the said device can be controlled to include,  
but are not limited to: a) a new way of responding to input to the device, b) a new way of sending  
5 output from the device, including the use of new, downloaded message, or c) a new way of  
handling the internal operations of the device. The data sent from the Broadcast System can be  
in different forms, including but not limited to: 1.) control codes which are keywords telling the  
receiving unit what to do; or 2.) actual software machine code. Encryption can be used to  
prevent the unauthorized change of the device. The manner in which configuration control is  
10 accomplished is further explained below.

1. Web Page Customizer

A web page is set-up to contain various configurable conditions of a device not directly  
connected to the Internet. A person is asked to select various options on the web page. Upon the  
15 completion of the input, the web page submits the data to a transmitter, which then sends one or  
more strings of data over the radio frequency to the said device.

2. E-mail Customizer

A person sends a piece of electronic mail to a specific address. In the mail, either in the header  
or body, are keywords that are intended to control the function of a device not directly connected  
20 to the Internet. In another embodiment, the address to which a user sends e-mail directly or  
indirectly indicates the function to be performed. The receiver of the e-mail is a computer, which  
interprets the keywords and then sends out one or more strings of data over the radio frequency  
to the specified device.

3. Custom Purpose Program

25 A custom-purpose program is set-up on a person's computer. When run, this program asks the  
person to define the configuration of a device not directly connected to the Internet. Once the  
user inputs the data, the program sends keywords to a receiving computer on the Internet, which  
then sends one or more strings of data over the radio frequency to the said device. In another  
embodiment, the program sets up the computer such that the user can send the data to the  
30 receiving device through, e.g., infra-red communications.

4. Configuration Across Radio Frequency

One or more strings of data are sent across radio frequency with information to configure a  
particular device -- one that is not directly connected to the Internet or a computer network. As  
35 part of the broadcast, an identification is included, which uniquely addresses the said device. The  
device can be the only device responding to this identification, or as part of a class of devices  
responding to this identification. Upon detecting an identification match, the said device or  
devices reconfigures itself (or themselves) according to the instructions in the broadcast.

1       D.     In-Unit Profile

5       According to the present invention, and as an alternative to, or in combination with, On-Demand Narrowcasting, the Broadcast System transmits certain or all aspects of the listener's Control Set-up Specifications which are received by, and installed in, the listener's individual radio unit ("In-radio Setup Specifications").

10       The user's ODR unit includes a radio frequency receiver, a memory, a microprocessor and storage system. In an embodiment in which the ODR unit is integrated with a radio, the ODR unit includes a radio frequency receiver (300), a memory (210), a microprocessor and storage system (320), and a player (310) as depicted in FIG. 19b. Some portion of the Control Set-up Specifications' user profile is stored in the memory of the user's receiver device system; the information will be used to select from all broadcast information. Selected information is stored in the memory for future retrieval.

15       E.     On-Demand Reception

15       According to the present invention, the listener's In-Unit Profile can be used by the listener's individual radio unit to select information delivered by the Broadcast System according to the individual listener's specified interests ("On-Demand Reception"). In one embodiment, the receiver has the capability to scan the frequencies and/or match key tokens from each broadcast in order to find the frequency in which the Broadcast System broadcast(s).

20       A program broadcast can consist of multiple numbers of files (voice and/or other types of data). Alternatively, a program can be one single file. The data can have markers in certain locations within the file to mark the boundary from one story to another and/or locations for commercials.

25       In one embodiment, the listener's ODR radio unit continuously receives information delivered by the Broadcast System. In an alternative embodiment, the listener's ODR radio unit receives ODR broadcasts on a periodic schedule, for instance, every five minutes. This schedule of reception is referred to as an "ODR reception period." At the beginning of the example five minute period, the ODR unit looks for headers that match information for which the ODR is looking and which should be selected by the ODR unit. To the extent that one or more headers are encountered that match parameters for the particular ODR unit, the ODR unit will continue to receive the additional information and store the information in the memory of the ODR unit. Once the ODR unit has completely stored all broadcast information for the particular ODR unit, the ODR unit will enter a "sleep" mode until the beginning of the next scheduled ODR reception period. If the ODR unit does not detect any headers that match parameters for the particular ODR unit, then, without receiving the additional data, the ODR unit enters the sleep mode until the beginning of the next scheduled ODR reception period.

35       In one embodiment of the present invention, the user specifies the typical amount of time that the user has to listen to the radio. For instance, the user can specify, when setting up the Control

1 Set-up Specifications, that the user's daily one-way commute is typically one hour. According  
to the invention, the system will customize the arrangement and/or amount of information  
received and stored according to the amount of time specified by the user as a typical listening  
session. The system will also determine whether to use a short version or detailed version of a  
5 particular story based upon the In-Unit Profile.

As is described further below, there are memory and navigational buttons in one embodiment  
of the invention by which the user can specify and/or reorganize the priority by which the user  
wants to listen to the ODR received information. According to the invention, the system will  
customize the order of and amount of information that the system receives and stores according  
10 to one or more of the following: a) The user-specified amount of time of a typical listening  
period; and/or b) The user-defined priority of topics as defined by the user defined buttons on  
the device.

According to the present invention, methods and systems are provided for downloading data  
from a host computer, several host computers, or one or more web sites to a radio unit device  
15 with memory (random access memory) sufficient to hold said data. In accordance with Control  
Set-up Specifications and/or In-Unit Profile, the data will be transmitted to, selected by, and/or  
stored in the memory of the listener's individual radio unit. One embodiment of the way in  
which the In-Unit Profile is used to control the reception of information related to the user's  
specified interests is described below.

20 In one embodiment, the broadcast is an analog AM broadcast. In this embodiment, the  
Broadcast System inserts the keywords at a point in time after the beginning of the story. In this  
embodiment, the receiver is programmed to synchronize story capture. A start of story signal  
(trigger) is provided at the start of each story. Synchronized story capture will be accomplished  
25 in the receiver with the help of the trigger and a memory buffer of sufficient size to provide for  
the following procedure: the receiver will receive the trigger signal and the news story; the  
receiver is programmed to begin recording the story into memory; some seconds later, it will  
receive the keyword coding for the story; if the keyword coding matches the preset preference  
filters for the particular unit as indicated in the In-Unit Profile, then the unit has identified a "hit"  
30 and the unit will continue to record the story; otherwise, recording will be abandoned and the unit  
is reset to wait for the start of the next story.

#### 1. Receiver

35 In one embodiment, the Receiver is responsible for selectively screening the broadcast for  
information that the listener wants. In this embodiment, the Receiver uses information from  
Filter.DAT and selectively picks up data from Broadcast data to save in PlayList.DAT,  
PhraseList.DAT, and Commercials.DAT. These three files contain the control data and pointers  
that determine the content and sequence of the speech played. All of the files mentioned are  
described further below.

In an embodiment in which the ODR unit is integrated with a radio, and where the tuner/receiver is shared between the ODR and the radio, if the user is not using the radio to receive any other station, then the ODR radio will enter an idle mode in which the tuner will be tuned to the ODR data broadcast station to receive data throughout the day.

In a typical embodiment, only news stories with the appropriate keywords will be selectively stored into memory. This way, all the news stories desired by the user will be in memory and ready to play when the user turns on his radio.

In one embodiment where the user has configured the user's ODR unit to record radio shows from regular AM or FM stations at the proper time, the Receiver begins to digitize and store the voice data from the radio frequency specified in the Control Setup Specification. In one embodiment, the ODR unit determines the type of sound compression used from information provided by the Control Setup Specifications. In another embodiment, the type of sound compression used is determined automatically by the ODR unit based on the availability of memory (e.g., random access memory).

## 2. Filter.DAT

Filter.DAT includes the definitions of the listener's profile, including the listener's interests and preferences. Filter.DAT also includes the listener-defined preference for the order of the topics and subtopics are to be played -- which defines the ODR unit's actual play sequence. When a story comes in the broadcast, the Receiver consults Filter.DAT for the proper sequence to play. The following are the definitions of fields for Filter.DAT.

Field	Description	Exemplary Set
1. Topics	The specific topics that the listener wants to hear. These are designated by the key word "Topic=".	Topic=Traffic Topic=Stocks Topic=Top News Topic=General News Topic=Business News Topic=Sports News Topic=Sports Scores Topic=Entertainment News Topic=Advertisement Topic=Radio
2. Subtopics	These define what's available within each topic. These are designated by the keyword "Subtopic=".	Freeway segment locations (for Custom Commute Routes) Stock symbols (for Stocks) News categories (for News) Sports teams (for Sports Scores) Types of Products/Services (for Ads) Types of Music (for Radio)
3. Interest level	InterestLevel describes how the radio should treat that topic or subtopic. These are designated by the keyword "InterestLevel=".	InterestLevel=0 : No interest InterestLevel=1 : A little interested InterestLevel=2 : Moderately interested InterestLevel=3 : Very interested

The following is one embodiment of Filter.DAT.

1

## Filter.DAT

5

10

15

20

```

[Topic=Traffic] [Subtopic=Regional update, InterestLevel=3]
[Topic=Stocks] [Subtopic=Dow Jones, InterestLevel=3] [Subtopic=Nasdaq, InterestLevel=3]
[Subtopic=S&P 500, InterestLevel=3]
[Topic=Top News, InterestLevel=3]
[Topic=General News]
[Subtopic=World News, InterestLevel=2] [Subtopic=National News, InterestLevel=2] [Subtopic=Local
News, InterestLevel=2]

[Topic=Business News] [Subtopic=Technology, InterestLevel=2] [Subtopic=Banking, InterestLevel=2]
[Bio-technology, InterestLevel=2]

[Topic=Sports News]
[Subtopic=Football, InterestLevel=2] [Subtopic=Basketball, InterestLevel=2] [Subtopic=Basketball,
InterestLevel=2] [Subtopic=Hockey, InterestLevel=2] [Subtopic=Golf, InterestLevel=2]

[Topic=Sports Scores]
[Subtopic=Professional Football, Subtopic2=San Francisco 49ers, Subtopic2=Dallas Cowboys,
Subtopic2=Green Bay Packers]
[Subtopic=College Football, Subtopic2=San Jose State Spartans]
[Subtopic=Professional Basketball, Subtopic2=Chicago Bulls, Subtopic2=L.A. Lakers]
[Subtopic=College Basketball, Subtopic2=San Jose State Spartans]
[Subtopic=Professional Hockey, Subtopic2=San Jose Sharks]
[Subtopic=Professional Golf, Subtopic2=Tiger Woods]
[Subtopic=Beach Volleyball, Subtopic2=Kiraley/Stokelos]
[Subtopic=Horse Racing, Subtopic2=Bay Meadows]

[Topic=Entertainment]
[Subtopic=Movies, Preference=2] [Subtopic=TV, Preference=2] [Subtopic=Theater, Preference=2]
[Subtopic=Books, Preference=2]

```

25

Radio show data is delivered/downloaded to the user's ODR unit as part of the Control Setup Specification. Radio show data includes but is not limited to: 1.) recording times; 2.) show duration; 3.) station frequency, and/or 4.) other types of control data, including but not limited to: a.) whether the show is voice of music; b.) the proper sound compression algorithm used to record the show; and c.) user preference level of the show,. In one embodiment, the above-described radio show data is included as part of Filter.DAT.

30

In an embodiment that provides for custom traffic routes, Filter.dat describes the custom routes. The definition of a custom route in typical embodiment of Filter.dat is as follows:

35

RouteName	This is the name of the custom route.
FromTime	In one embodiment, this is the time of day to play the conditions on a specific custom route. Time is described in military hours without minutes. The ODR unit compares the From Time with the ODR unit's internal clock to decide if the conditions on the custom route should be played. In an embodiment integrated with a cellular telephone and/or a GPS system, the approximate location of the user can be deduced in the case of a cellular telephone, and can be identified with some specificity in the case of a GPS system. In the case of an ODR/GPS unit, the system knows the direction in which



1		the user is traveling. In such a cell-phone/GPS integrated system embodiment, the ODR system will further play traffic conditions for routes defined by the user as a custom commute route. In one such embodiment, the ODR system will play traffic conditions for routes over which the ODR system deduces that the user is traveling.
5	ToTime	This is the time of day to stop playing the conditions on this custom route. Time is described in military hours without minutes. The ODR unit compares this time against the ODR unit's internal clock to decide if the conditions on the custom route should be played.
10	Days	This is the days of the week when the ODR unit needs to track the conditions on this custom route.
15		The ODR unit checks the ODR unit's internal clock to see if the current day is included in the range. If so, and the time matches, the conditions on the custom route are played.
	Highway	The highway name. This is a text field even though all freeways are names with number.
	Direction	The direction of traffic: Northbound Southbound Westbound Eastbound
20		
	FromMile	The mile marker of the beginning of the segment of freeway. It is defined in reference to a fixed zero point.
25	ToMile	The mile marker of the end of the segment of freeway. It is defined in reference to the same fixed zero point as the From Mile.
	SortOrder	This field is not used in custom routes. Rather, it is used to play non-custom route traffic data using the new Broadcast.dat traffic records.
30		Freeway names are separated by the forward slash "/". The Customizer writes out a predefined SortOrder for each region. The listener does not get to define the sort order.
35		

1

The traffic record in one embodiment of Filter.dat is structured as follows:

5

[Topic=Traffic]

10

[RouteName=To Work, FromTime=5, ToTime=10, Days=MTWHF,  
Highway=101, Direction=Northbound, FromMile= 14, ToMile=45,  
Highway=380, Direction=Westbound, FromMile=0, ToMile=4  
Highway=280, Direction=Northbound, FromMile=96, ToMile=103]

15

-----  
[RouteName=To Home, FromTime=15, ToTime=20, Days=MTWHF,  
Highway=280, Direction=Southbound, FromMile=103, ToMile=96,  
Highway=380, Direction=Westboound, FromMile=4, ToMile=0,  
Highway=101, Direction=Southbound, FromMile= 45, ToMile=14]

20

-----  
[RouteName=To Church, FromTime=5, ToTime=10, Days=X,  
Highway=87, Direction=Southbound, FromMile=12, ToMile=-3]

-----  
[Subtopic=SF South Bay, SortOrder=101/880/680/280/237/87/85/1]

[Subtopic=SF Peninsula, SortOrder=101/280/80/380/92/84]

### 3. PhraseList.DAT

25

PhraseList.DAT contains common phrases used on the radio. For example, the announcement of each topic at the beginning of the topic, or the announcement of the summaries of the topic are phrases.

30

The following is a file structure of one embodiment of PhraseList.DAT, and the default file contents in that embodiment when the listener has not customized settings. It is understood in this application that file structures are described in a generic form; the generic form should be understood to include any data type, including but not to: text, digital, audio, compressed digital, compressed audio, binary, hexadecimal, etc.

35

PhraseList.DAT	
1	[Name=Traffic] [ID=1] [VoiceFile=Traffic.WAV]
	[Name=Stocks] [ID=2] [VoiceFile=Traffic.WAV]
5	[Name=Top News] [ID=3] [VoiceFile=Top News.WAV]
	[Name=General News] [ID=4] [VoiceFile=General News.WAV]
	[Name=Business News] [ID=5] [VoiceFile=Business News.WAV]
	[Name=Sports News] [ID=6] [VoiceFile=Sports News.WAV]
10	[Name=Sports Scores] [ID=7] [VoiceFile=Sports Scores.WAV]
	[Name=Entertainment News] [ID=8] [VoiceFile=Entertainment News.WAV]
	[Name= Summaries (These are the stories we have prepared for you) ] [ID=9]
	[VoiceFile=Summaries.WAV]
15	[Name=Radio][ID=10][VoiceFile=Radio.WAV]
	[Name=Coming up] [ID=10] [VoiceFile=Coming up.WAV]

#### F. User Interface

According to the present invention, the listener's individual radio unit provides methods, systems and apparatus by which the listener can request specific information stored in, or receivable by, the listener's individual radio unit ("User Interface").

In one embodiment, the user interface apparatus consists of a Preferred Radio and a small handheld remote control connected to the Preferred Radio, which can be a wired or wireless remote.

In one embodiment, the Preferred Radio is an ODR device that includes, among other things, a CPU programmed to, among other things, interface with the user and to retrieve data, a memory for storing data, voice reproduction circuitry, a voice synthesizer for converting the data into voice, and a cassette interface for outputting the sound of the audible data through the radio unit's speaker through the magnetic heads. To minimize memory usage, the data will be preferably stored in a compressed form.

For car radio units, the remote control will provide for simple functions and a minimal number of keys so that the user can navigate through the stored information.

The dialog between the user and the system will be very similar to a normal computer terminal interface with the distinction that, instead of displaying visual information for response, audible signals will be generated to prompt for input. Listeners input can be through physical commands as through the remote, and/or keys on the radio unit. In an alternative embodiment, listener input is provided through a speech recognition interface built into the radio unit. In one embodiment, the remote control unit is in the steering wheel.

On-Demand Radio stations will continuously broadcast stories pertaining to each topic. Typically, in the radio, a set amount of memory is allocated for each topic. Stories broadcast more recently will replace stories from the past, as in a FIFO.

#### 1. Program Cycle

The radio will play each topic according to a pre-established play sequence (the "playback cycle"). When the last topic has been played, the playback cycle begins with the first topic and plays any NEW material that has just come from the broadcast. The radio cycles through this loop until there are no more new materials. In one embodiment, stories that have already been played remain in memory and remain available for future replay.

The listener is able to add or remove topics from the play list by going to the On-Demand Radio Internet web site or by using the Quick Access buttons in the manner more fully described later in this specification.

In one embodiment, at the beginning of each topic, the radio makes a brief announcement of the topic name and story highlights (summaries). After announcing the summaries, each story is played sequentially, unless the listener decides to manually interrupt the automatic sequence. The following table is a visual representation of one embodiment of a default play sequence.

Traffic Update
Custom Commute Route 1
Custom Commute Route 2
Highway #1 northbound
Highway #1 southbound
Highway #2 northbound
Highway #2 southbound
Stocks
Custom stock 1
Custom stock 2
Top Stories
Summaries
Story 1
Story 2
Story 3
General News
Summaries
Story 1
Story 2
Story 3

1	Sports News
	Summaries
	Story 1
	Story 2
5	Story 3
	Sports scores
	Sport 1, team 1 game summary
	Sport 1, team 2 game summary
	Sport 2, team 1 game summary
10	Sport 2, team 2 game summary
	Entertainment News
	Summaries
	Story 1
	Story 2
15	Radio shows
	Show 1
	Show 2
	Show 3
	Advertisements
20	Store type 1
	Store 1
	Store 2
	Store type 2
	Store 1
	Store 2
25	<i>Repeat from beginning</i>

2. Play Sequence

a. Automatic Play Sequence

30 On-Demand Radio is set to automatically play in a way that minimizes user button pushing. The automatic play sequence is listed in the Program Cycle section.

b. Sections

35 With the use of “sections”, the invention provides the listener faster access to specific areas of a topic. For example, under the topic Traffic, in the San Francisco Bay Area, there are several regions: North Bay, East Bay, Peninsula, and South Bay. Each region is assigned a section. Within each of these sections, there are stories about the traffic conditions on freeways. A listener is able to navigate from story to story, as well as from section to section. In this case, a listener can skip to a section such as South Bay by pushing the Skip Section button 3 times.



1 Within a section, the listener can skip from freeway to freeway using the Skip Story button.

c. Consolidation of Topics

5 In one embodiment, in order to make it easier for the listener to remember how to navigate through the information, several topics are consolidated into one. For example, all news topics such as top news, business news, local news, sports news, world news, and U.S. news are all grouped under the topic news, and assigned one Quick Access button. Similarly, all magazine-type contents such as Travel, Health & Living, Science, and Technology are all grouped under Magazines, and assigned one Quick Access button. Mapping it this way allows each of the six Quick Access buttons to represent a type of content. With the new grouping, the  
10 six Quick Access buttons may look like this:

Button	Topic
I.	Traffic
II.	Stocks
15 III.	Sports Scores
IV.	News
V.	Magazines
VI.	Radio shows Advertisement

20 In one embodiment, there are no navigational buttons used to go from topic to topics. The listener presses the specific Quick Access button to get to that topic. In one embodiment, a NEXT TOPIC button (1220) and a REPEAT TOPIC button (1230) are provided. Pressing the NEXT TOPIC button (1220) causes the ODR unit to begin playing the next logical topic in the play list sequence. Pressing the REPEAT TOPIC button (1230) causes the ODR unit  
25 to begin playing the immediately preceding topic in the play list.

d. Content Pool Button

30 The function of the Content Pool, typically button #6 (1155), is slightly different from the way that the other buttons function, but is designed to be equally intuitive. In a typical embodiment of the content pool button, the first push of Quick Access button #6 (1155) reaches the first topic in the Content Pool. For example, consider that there are three topics in the Content Pool: Radio Shows, Spanish Broadcast, and Chinese Broadcast. The first push of button #6 reaches Radio Shows. Press the button 2 more times reaches Chinese News. Within each of these topics, a listener can use the Skip Story and Skip Section to navigate. If the listener finds a section interest, the listener can then push and hold button #6 to  
35 program it. Let's say he likes Chinese News Taiwan section. Pressing and holding down button #6 while listening to Chinese News Taiwan Section makes Chinese News the first topic in the Content Pool, and Taiwan section the first section in Chinese News.

1                   3.     Alerts

Alerts are information that are played immediately when received, regardless of the mode in which the ODR unit is playing. That is, Alert delivery will interrupt regular AM listening, FM listening and/or ODR/News listening.

5                   There are several types of Alerts, including but not limited to: Weather, Emergency, Traffic, Sports, and Stock. This list of Alert types is exemplary and is not in any way a limitation of the invention.

                  a.     Customized Alerts

10                  Some types of Alerts will only cause an interruption of programming if the user has predefined the particular type of Alert to cause such an immediate interruption. Such customized Alerts may also require additional pre-definition information to activate the Alert and allow the Alert to interrupt programming. For instance, the user can define one or more Stock Alerts. The user will be provided with the opportunity to define the basis for the Alert. That is, the user will be provided the opportunity to identify a particular level of change for a particular stock (high price level, low price level, price change) or for a particular index, e.g., if the DOW Jones index drops more than, e.g., 50 points.

15                  Similarly, the user can define one or more Sports Alerts. In the case of Sports Alerts, the user will be provided with the opportunity to define the type of Alert that the user is interested in receiving. For instance, the Sports Alert can be targeted to a particular game and particular aspects within that game. As an example, the user can request Alerts when the score of a particular football game changes and at the end of each quarter. A Sports Alert can be targeted to a particular team and events for that particular team. As an example, the user can request Alerts whenever a particular team is about to begin a game, whenever the score changes for any game in which that team plays. A Sports Alert can be targeted to a particular player. For example, the user can identify that the user wants to know every time a particular football player makes a score.

20                  The user can define a customized traffic Alert. If the user has defined a customized traffic Alert, then the Alert function will provide the user with traffic alerts that effect the route identified by the user. In a system in which the ODR unit is integrated with a cellular telephone and/or a GPS system, the user can request traffic Alerts for all real-time locations. The ODR system can deduce the driver's location and in the case of a GPS integrated system, the driver's direction. Such an integrated ODR/GPS and/or ODR/cell phone system can provide traffic Alerts that effect the location and/or the direction being traveled by the user.

25                  The above-described examples of Alerts are exemplary and are not a limitation of the invention

35                       b.     Standard Alerts

Weather Alerts and other types of Emergency Alerts will interrupt all types of programming regardless of user-defined interests. For instance, the approach of a hurricane,

1       tornado, or severe thunderstorm would be announced to interrupt any type of programming. Similarly, a high-speed chase on any traffic route in the area would cause an interruption of all types of programming.

      G. On-Demand Content

5       According to the present invention, many different types of information can be made available from which the listener/user can select ("On-Demand Content"). There are many possible sources from which On-Demand Content can be collected and there are multiple strategies by which On-Demand Content can be prepared for broadcast to the listener/user.

10      **Illustrative Embodiments**

      The embodiments of the invention described herein are only considered to be preferred and/or illustrative of the inventive concept; the scope of the invention is not to be restricted to such embodiments. Various and numerous other arrangements may be devised by one skilled in the art without departing from the spirit and scope of this invention. For example,  
15      alternative topics and categories of information are possible.

20

25

30

35

## 1 WHAT IS CLAIMED IS:

1. A radio apparatus comprising:
  - a receiver to receive a first plurality of transmitted radio signals;
  - 5 a tuner for extracting radio signals from the first plurality of transmitted radio signals according to a user-specified radio frequency; and
  - a microprocessor electronically connected to said receiver, to said tuner and to a global positioning navigation system.
- 10 2. The radio apparatus of claim 1 wherein a second plurality of said transmitted radio signals contain at least one global positional area identifier, said radio apparatus further comprising:
  - said microprocessor programmed to identify a global positional location of said receiver;
  - and
  - 15 said microprocessor further programmed to select a subset of the extracted radio signals according to said identified global positional location of said receiver.
3. The radio apparatus of claim 2 further comprising:
  - sound delivery circuitry electronically connected to said microprocessor for delivering
  - 20 in audible form the said subset of selected radio signals.
4. The radio apparatus of claim 3 further comprising:
  - a user interface.
- 25 5. The radio apparatus of claim 4 wherein said user interface further comprising:
  - one or more faceplate buttons electronically connected to the microprocessor;
  - said microprocessor further programmed to respond to a change in physical sensing of one or more of said faceplate buttons; and
  - at least one of said response to cause an interruption in the delivery of said audible sounds
  - 30 and to further cause an alternative ordering of delivery of said audible sounds.
6. The radio apparatus of claim 5 wherein a second plurality of said transmitted radio signals contain one or more of a plurality of categories; and
  - wherein said microprocessor further programmed to select a subset of the extracted radio
  - 35 signals according to a user-selected category.

1        7. The radio apparatus of claim 1 wherein said microprocessor is electronically  
connected to an automobile computer housed within an automobile .

5        8. The radio apparatus of claim 7 further comprising:  
said automobile computer programmed to collect data about operational aspects of the  
automobile within which the automobile computer is housed; and  
said microprocessor programmed to extract data collected by the automobile computer.

10       9. The radio apparatus of claim 8, wherein a second plurality of said transmitted radio  
signals contain at least one global positional area identifier, said radio apparatus further  
comprising:

said microprocessor further programmed to identify a global positional location of the  
receiver;

15       said microprocessor further programmed to compare the data collected by the automobile  
computer and the global positional location of the receiver with the global positional area  
identifier associated with the global positional identifier for each converted transmitted radio  
signal; and

20       said microprocessor further programmed to select for delivery through the radio apparatus  
each extracted radio signal having a global positional area identifier that pertains to an area  
within which the global positional location of said receiver exists and which corresponds to  
the data collected by the automobile computer.

25       10. The radio apparatus of claim 8 further comprising:  
said microprocessor further programmed to compile user profile information about a  
driver of the automobile; and  
said microprocessor further programmed to store said user profile information in a  
memory electronically connected to said microprocessor.

30       11. The radio apparatus of claim 1 further comprising:  
said microprocessor programmed to identify each extracted radio signal that contains an  
update for a global positioning data base;  
said microprocessor further programmed to select each extracted radio signal containing  
a data base update; and  
said microprocessor further programmed to use each data base update to update the global  
35       positioning data base.



1           12.       The radio apparatus of claim 1 further comprising:  
          said microprocessor programmed to identify a global positioning location of said receiver  
          on a periodic basis.

5           13. The radio apparatus of claim 13 further comprising:  
          said microprocessor further programmed to retrieve information from a guide data base  
          for delivery through the radio apparatus, wherein said retrieved information pertains to the  
          location of said receiver.

10          14. The radio apparatus of claim 12 further comprising:  
          said microprocessor further programmed compile as a route over a time period each  
          successive global positioning location of said receiver; and  
          said microprocessor further programmed to store said route in a memory electronically  
          connected to said microprocessor.

15          15. The radio apparatus of claim 1 wherein said microprocessor is electronically  
          connected to a cellular telephone.

20          16. The radio apparatus of claim 15 further comprising:  
          said microprocessor programmed to extract digital information communicated to said  
          cellular telephone;  
          said microprocessor further programmed to convert extracted digital information to  
          audibly deliverable information; and  
          said microprocessor further programmed to deliver said audibly deliverable information  
25          through an audio circuit configuration of said radio apparatus.

          17. The radio apparatus of claim 15 wherein said microprocessor is electronically  
          connected to a personal computer.

30          18. The radio apparatus of claim 17 further comprising:  
          said personal computer programmed to receive user input;  
          said personal computer programmed to provide received user input to said  
          microprocessor;  
          said microprocessor further programmed to convert said provided user information to  
35          audibly deliverable information; and  
          said microprocessor further programmed to deliver in audible form said audibly  
          deliverable information through an audio circuit configuration of said radio apparatus.

1        19. The radio apparatus of claim 3 further comprising:  
a memory for storing a plurality of user-specified selection criteria and for storing radio  
signals;  
said microprocessor electronically connected to the memory;  
5        said microprocessor is programmed to select user-specified selection criteria from said  
extracted radio signals;  
said microprocessor further programmed to select a subset of the extracted radio signals  
according to said stored user-specified selection instructions;  
said microprocessor further programmed to store said subset of selected radio signals in  
10       the memory; and  
sound delivery circuitry electronically connected to said microprocessor for delivering  
in audible form the said subset of selected radio signals in the memory.

15       20. A computer system programmed for providing personalized radio content, said  
computer system configured with a computer processing unit electronically connected to a  
tuner, to a receiver, and to a global positioning device, said computer system programmed  
to:  
convert to digital form a first plurality of transmitted radio signals, wherein a second  
20       plurality of said transmitted radio signals contain a global positional area identifier.

21. The computer system of claim 20, said computer system further programmed to:  
identify a global positional location of the receiver;  
compare the global positional location of the receiver with the global positional area  
identifier associated with each converted transmitted radio signal; and  
25       select each converted radio signal having a global positional area identifier that pertains  
to an area within which the global positional location of said receiver exists.

22. The computer system of claim 21 said computer system further configured with the  
computer processing unit electronically connected to an automobile computer housed within  
30       an automobile.

23. The computer system of claim 22 wherein said computer system further  
programmed to:  
instruct said automobile computer to collect data about operational aspects of the  
35       automobile within which the automobile computer is housed; and  
instruct said computer processing unit to extract data collected by the automobile  
computer.

1        24. The computer system of claim 22, said computer system further programmed to instruct said computer processing unit to:

5        compare the data collected by the automobile computer and the global positional location of the receiver with the global positional area identifier associated with the global positional identifier for each converted transmitted radio signal; and

      select for delivery through the radio apparatus each extracted radio signal having a global positional area identifier that pertains to an area within which the global positional location of said receiver exists and which corresponds to the data collected by the automobile computer.

10       25. The computer system of claim 24, said computer system further programmed to instruct said computer processing unit to:

      compile user profile information about a driver of the automobile; and

15       store said user profile information in a memory electronically connected to said microprocessor.

      26. The computer system of claim 25, said computer system further programmed to instruct said computer processing unit to:

20       identify each extracted radio signal that contains an update for a global positioning data base;

      select each extracted radio signal containing a data base update; and  
      use each data base update to update the global positioning data base.

25       27. The computer system of claim 26, said computer system further programmed to instruct said computer processing unit to:

      identify a global positioning location of said receiver on a periodic basis.

30       28. The computer system of claim 27, said computer system further programmed to instruct said computer processing unit to:

      retrieve information from a guide data base for delivery through the radio apparatus, wherein said retrieved information pertains to the location of said receiver.

35       29. The computer system of claim 27, said computer system further programmed to instruct said computer processing unit to:

      compile as a route over a time period each successive global positioning location of said receiver; and

      store said route in a memory electronically connected to said microprocessor.

1       30. The computer system of claim 20 wherein said computer processing unit is electronically connected to a cellular telephone.

5       31. The computer system of claim 30, said computer system further programmed to instruct said computer processing unit to:

extract digital information communicated to said cellular telephone;

convert extracted digital information to audibly deliverable information; and

deliver said audibly deliverable information through an audio circuit configuration of said radio apparatus.

10

32. The computer system of claim 30, wherein said computer processing unit is electronically connected to a personal computer.

15       33. The computer system of claim 32, said computer system further programmed to: instruct said personal computer programmed to receive user input;

instruct said personal computer programmed to provide received user input to said microprocessor;

instruct said computer processing unit to convert said provided user information to audibly deliverable information; and

20       instruct said computer processing unit to deliver in audible form said audibly deliverable information through an audio circuit configuration of said radio apparatus.

25       34. A computer program product for providing personalized radio content, wherein said computer program product is programmed to operate on a computer system configured with a computer processing unit electronically connected to a tuner, to a receiver, and to a global positioning device, said computer program product having instructions for:

converting to digital form a first plurality of transmitted radio signals, wherein a second plurality of said transmitted radio signals contain a global positional area identifier.

30       35. The computer program product of claim 34, said computer program product having further instructions for:

identifying a global positional location of the receiver;

comparing the global positional location of the receiver with the global positional area identifier associated with each converted transmitted radio signal; and

35       selecting each converted radio signal having a global positional area identifier that pertains to an area within which the global positional location of said receiver exists.

1

36. The computer program product of claim 35 wherein said computer program product is programmed to operate on a computer system further configured with the computer processing unit electronically connected to an automobile computer housed within an automobile.

5

37. The computer program product of claim 36, said computer program product having further instructions for:

10

instructing said automobile computer to collect data about operational aspects of the automobile within which the automobile computer is housed; and

instructing said computer processing unit to extract data collected by the automobile computer.

15

38. The computer program product of claim 36, said computer program product having further instructions for:

comparing the data collected by the automobile computer and the global positional location of the receiver with the global positional area identifier associated with the global positional identifier for each converted transmitted radio signal; and

20

selecting for delivery through the radio apparatus each extracted radio signal having a global positional area identifier that pertains to an area within which the global positional location of said receiver exists and which corresponds to the data collected by the automobile computer.

25

39. The computer program product of claim 38, said computer program product having further instructions for:

compiling user profile information about a driver of the automobile; and

storing said user profile information in a memory electronically connected to said microprocessor.

30

40. The computer program product of claim 39, said computer program product having further instructions for:

identifying each extracted radio signal that contains an update for a global positioning data base;

35

selecting each extracted radio signal containing a data base update; and

using each data base update to update the global positioning data base.



1

41. The computer program product of claim 40, said computer program product having further instructions for:

identifying a global positioning location of said receiver on a periodic basis.

5

42. The computer program product of claim 41, said computer program product having further instructions for:

retrieving information from a guide data base for delivery through the radio apparatus, wherein said retrieved information pertains to the location of said receiver.

10

43. The computer program product of claim 41, said computer program product having further instructions for:

compiling as a route over a time period each successive global positioning location of said receiver; and

15

storing said route in a memory electronically connected to said microprocessor.

44. The computer program product of claim 34, wherein said computer program product is programmed to operate on a computer system further configured with the computer processing unit electronically connected to a cellular telephone.

20

45. The computer program product of claim 44, said computer program product having further instructions for:

extracting digital information communicated to said cellular telephone;

converting extracted digital information to audibly deliverable information; and

25

delivering said audibly deliverable information through an audio circuit configuration of said radio apparatus.

46. The computer program product of claim 44, wherein said computer program product is programmed to operate on a computer system further configured with the computer processing unit electronically connected to a personal computer.

30

47. The computer program product of claim 46, said computer program product having further instructions for:

instructing said personal computer programmed to receive user input;

35

instructing said personal computer programmed to provide received user input to said microprocessor;

1        instructing said computer processing unit to convert said provided user information to  
audibly deliverable information; and

      instructing said computer processing unit to deliver in audible form said audibly  
deliverable information through an audio circuit configuration of said radio apparatus.

5

      48. A radio apparatus for providing radio content according to a user-selected selection  
identifier, the radio apparatus comprising:

      a receiver to receive a first plurality of transmitted radio signals;

      a tuner for extracting radio signals from the first plurality of transmitted radio signals,  
10        wherein a second plurality of said transmitted radio signals contain at least one content  
selection identifier; and

      a microprocessor electronically connected to said receiver and to said tuner.

      49. The radio apparatus of claim 48, said radio apparatus further comprising:

15        said microprocessor further programmed to select a subset of the extracted radio signals  
according to a user-selected content selection identifier.

      50. The radio apparatus of claim 49 further comprising:

20        said microprocessor further programmed to record said selected subset of the extracted  
radio signals.

      51. The radio apparatus of claim 50 further comprising:

      said microprocessor further programmed to convert said selected subset of the extracted  
radio signals to audibly deliverable information; and

25        said microprocessor further programmed to deliver in audible form said audibly  
deliverable information through an audio circuit configuration of said radio apparatus.

      52. A computer program product for providing radio content according to a user-  
selected content selection identifier, said computer program product having instructions for:

30        extracting radio signals from a first plurality of transmitted radio signals, wherein a  
second plurality of said transmitted radio signals contain at least one content selection  
identifier.

      53. The computer program product of claim 52, said computer program product having  
35        further instructions for:

      selecting a subset of the extracted radio signals according to a user-selected selection  
identifier.

1           54. The computer program product of claim 53, said computer program product having further instructions for:  
            recording said selected subset of the extracted radio signals.

5           55. The computer program product of claim 54, said computer program product having further instructions for:  
            converting said selected subset of the extracted radio signals to audibly deliverable information; and  
            delivering in audible form said audibly deliverable information through an audio circuit  
10           configuration of said radio apparatus.

            56. A method for providing personalized radio content, wherein said method uses a computer system configured with a computer processing unit electronically connected to a tuner, to a receiver, and to a global positioning device, said method comprising:  
15           converting to digital form a first plurality of transmitted radio signals, wherein a second plurality of said transmitted radio signals contain a global positional area identifier.

            57. The method of claim 56, said method further comprising:  
            identifying a global positional location of the receiver;  
20           comparing the global positional location of the receiver with the global positional area identifier associated with each converted transmitted radio signal; and  
            selecting each converted radio signal having a global positional area identifier that pertains to an area within which the global positional location of said receiver exists.

25           58. The method of claim 57 wherein said method uses a computer system further configured with the computer processing unit electronically connected to an automobile computer housed within an automobile.

            59. The method of claim 58, said method further comprising:  
30           instructing said automobile computer to collect data about operational aspects of the automobile within which the automobile computer is housed; and  
            instructing said computer processing unit to extract data collected by the automobile computer.

35

1           60. The method of claim 58, said method further comprising:  
          comparing the data collected by the automobile computer and the global positional  
          location of the receiver with the global positional area identifier associated with the global  
          positional identifier for each converted transmitted radio signal; and  
5           selecting for delivery through the radio apparatus each extracted radio signal having a  
          global positional area identifier that pertains to an area within which the global positional  
          location of said receiver exists and which corresponds to the data collected by the  
          automobile computer.

10          61. The method of claim 60, said method further comprising:  
          compiling user profile information about a driver of the automobile; and  
          storing said user profile information in a memory electronically connected to said  
          microprocessor.

15          62. The method of claim 61, said method further comprising:  
          identifying each extracted radio signal that contains an update for a global positioning  
          data base;

          selecting each extracted radio signal containing a data base update; and  
20          using each data base update to update the global positioning data base.

          63. The method of claim 62, said method further comprising:  
          identifying a global positioning location of said receiver on a periodic basis.

25          64. The method of claim 63, said method further comprising:  
          retrieving information from a guide data base for delivery through the radio apparatus,  
          wherein said retrieved information pertains to the location of said receiver.

          65. The method of claim 63, said method further comprising:  
30          compiling as a route over a time period each successive global positioning location of  
          said receiver; and  
          storing said route in a memory electronically connected to said microprocessor.

          66. A method for providing personalized radio content, wherein said method uses a  
35          computer system configured with a computer processing unit electronically connected to  
          a tuner, to a receiver, and to a global positioning device, said method comprising: The  
          method of claim 56, wherein said method uses a computer system further configured with  
          the computer processing unit electronically connected to a cellular telephone.

1        67. The method of claim 66, said method further comprising:  
extracting digital information communicated to said cellular telephone;  
converting extracted digital information to audibly deliverable information; and  
5        delivering said audibly deliverable information through an audio circuit configuration  
of said radio apparatus.

68. The method of claim 66, wherein said method uses a computer system further  
configured with the computer processing unit electronically connected to a personal  
computer.

10       69. The method of claim 68, said method further comprising:  
instructing said personal computer programmed to receive user input;  
instructing said personal computer programmed to provide received user input to said  
microprocessor;  
15       instructing said computer processing unit to convert said provided user information to  
audibly deliverable information; and  
instructing said computer processing unit to deliver in audible form said audibly  
deliverable information through an audio circuit configuration of said radio apparatus.

20       70. A method using a computer and a radio apparatus for providing radio content  
according to a user-selected content selection identifier, said method comprising:  
extracting radio signals from a first plurality of transmitted radio signals, wherein a  
second plurality of said transmitted radio signals contain at least one content selection  
identifier.

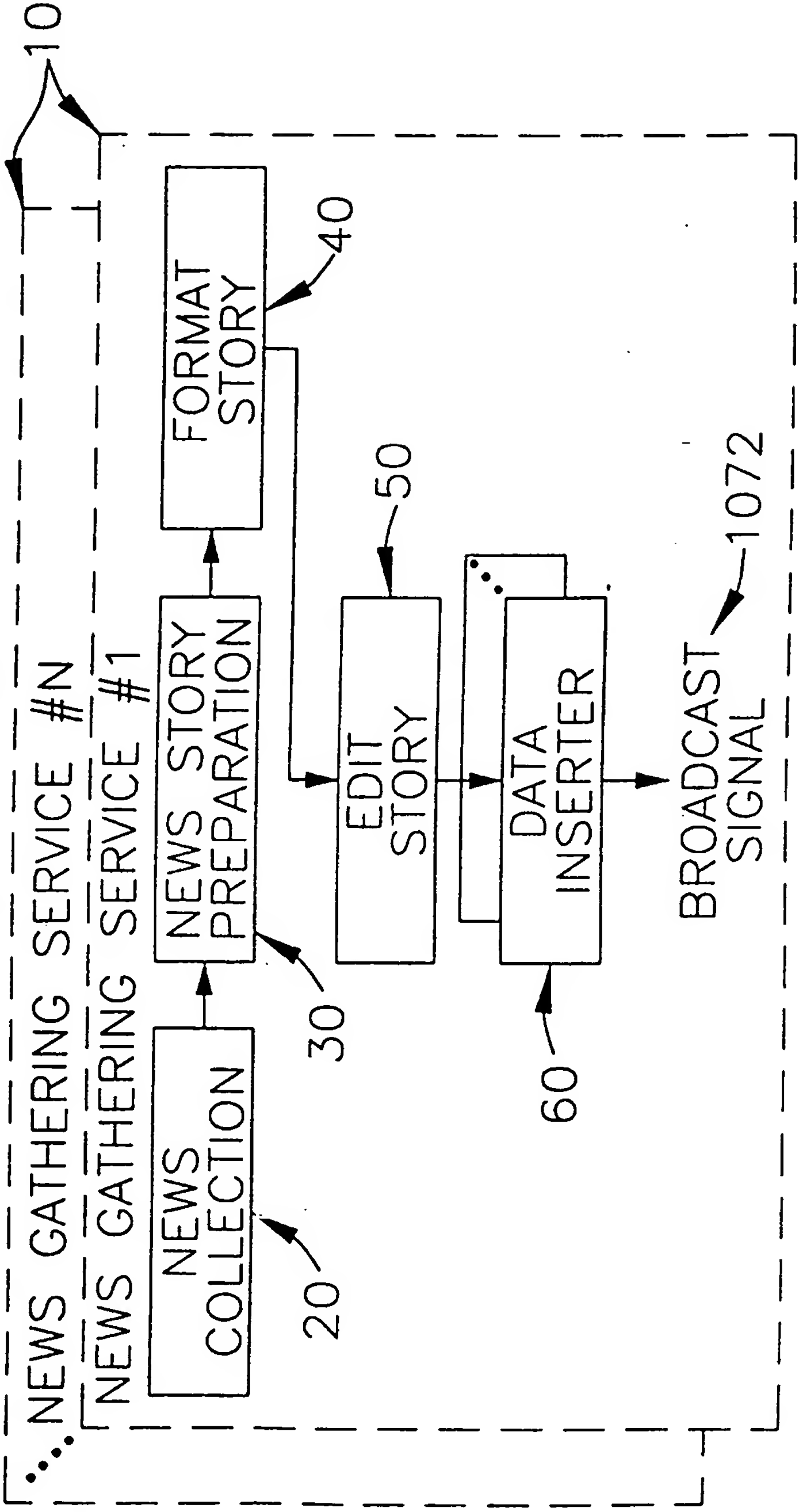
25       71. The method of claim 70, said method further comprising:  
selecting a subset of the extracted radio signals according to a user-selected selection  
identifier.

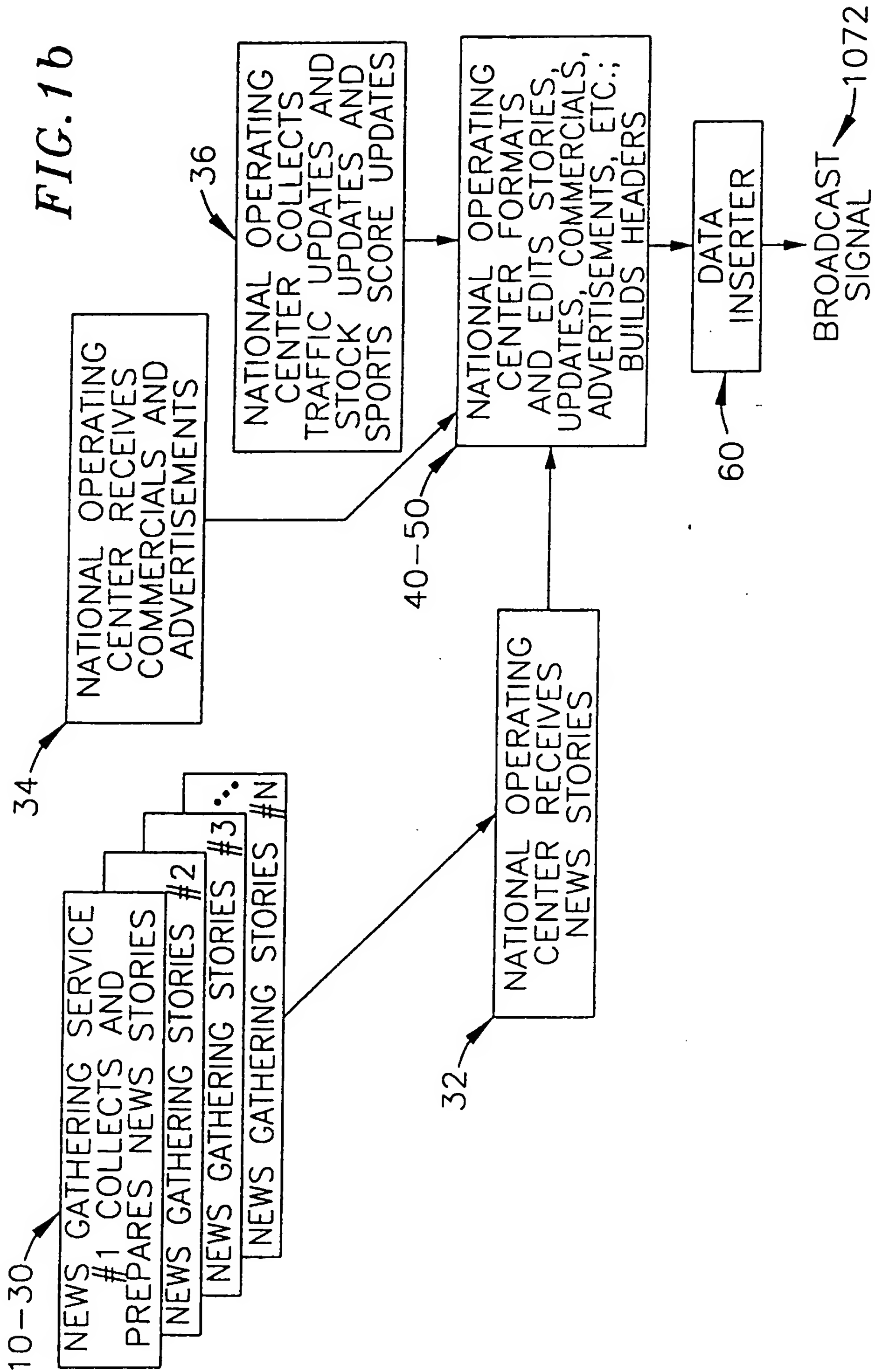
30       72. The method of claim 53, said method further comprising:  
recording said selected subset of the extracted radio signals.

73. The method of claim 72, said method further comprising:  
converting said selected subset of the extracted radio signals to audibly deliverable  
35       information; and  
delivering in audible form said audibly deliverable information through an audio circuit  
configuration of said radio apparatus.



FIG. 1a





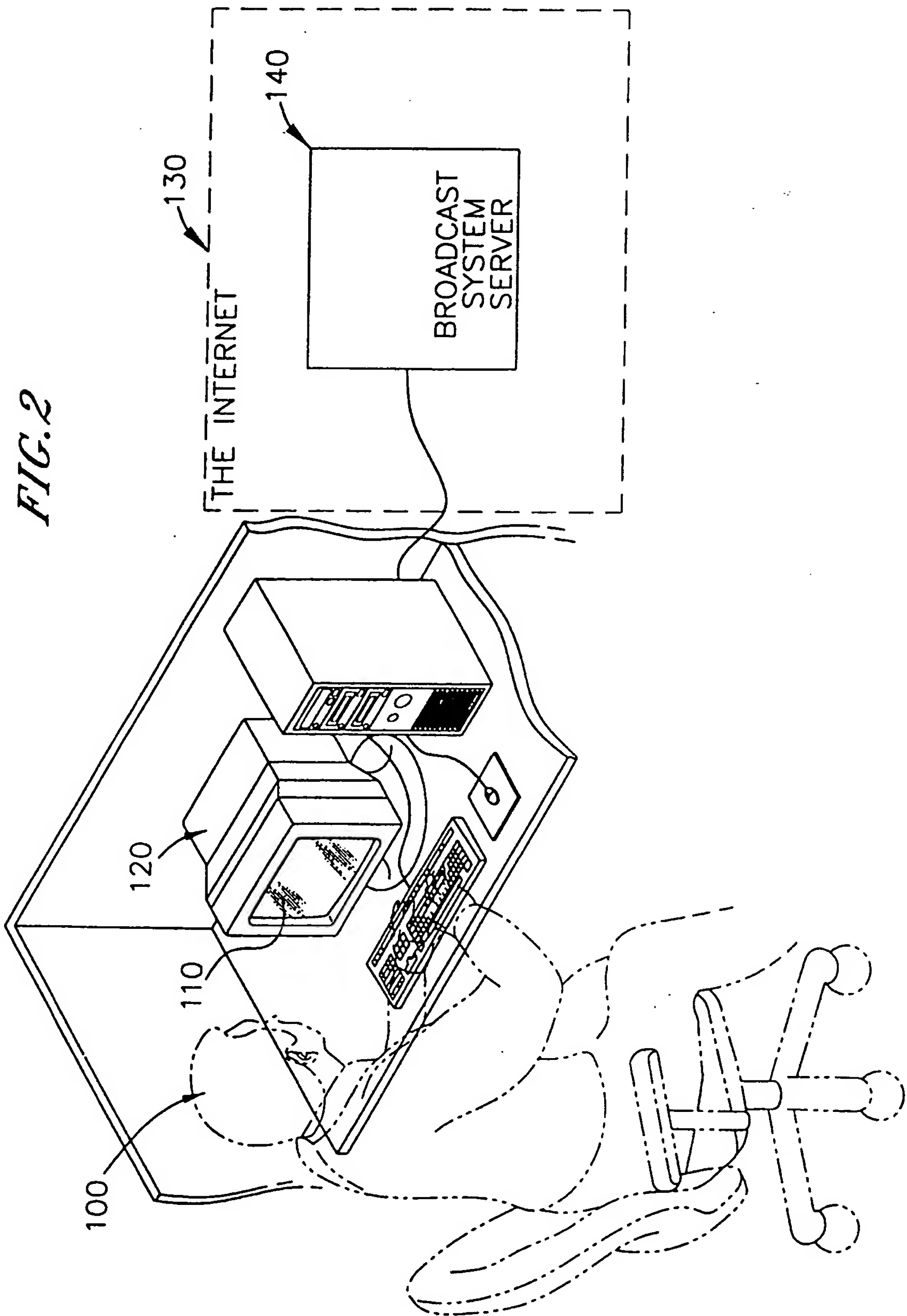


FIG.3

<u>UNIT ID 1</u>	<u>UNIT ID 2 . . . . .</u>	<u>UNIT ID NNN....N</u>
PERSONAL INFO RE UNIT'S OWNER/USER	PERSONAL INFO RE UNIT'S OWNER/USER	PERSONAL INFO RE UNIT'S OWNER/USER
OWNER/USER'S(# <sub>1</sub> ) -PREFERENCES -INTERESTS	OWNER/USER'S(# <sub>2</sub> ) -PREFERENCES -INTERESTS	OWNER/USER'S(# <sub>NNN....N</sub> ) -PREFERENCES -INTERESTS

FIG. 4

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARD

STOP

REFRESH

HOME

SEARCH

FAVORITES

HISTORY CHANNELS

FULLSCREEN

MAIL

PRINT

EDIT

ON-DEMAND RADIO BANNER

S.F. CHRONICLE BANNER

ON-DEMAND RADIO

THE ONLY WAY TO GET NEWS AND INFORMATION

LOGIN

USER NAME:

PASSWORD:

ENTER

NEW ACCOUNT

SET UP A NEW ACCOUNT!!!

MORE INFORMATION

CUSTOMIZER VERSION 0.9d2

SIGN UP HERE:

LOCAL INTRANET ZONE



FIG. 5

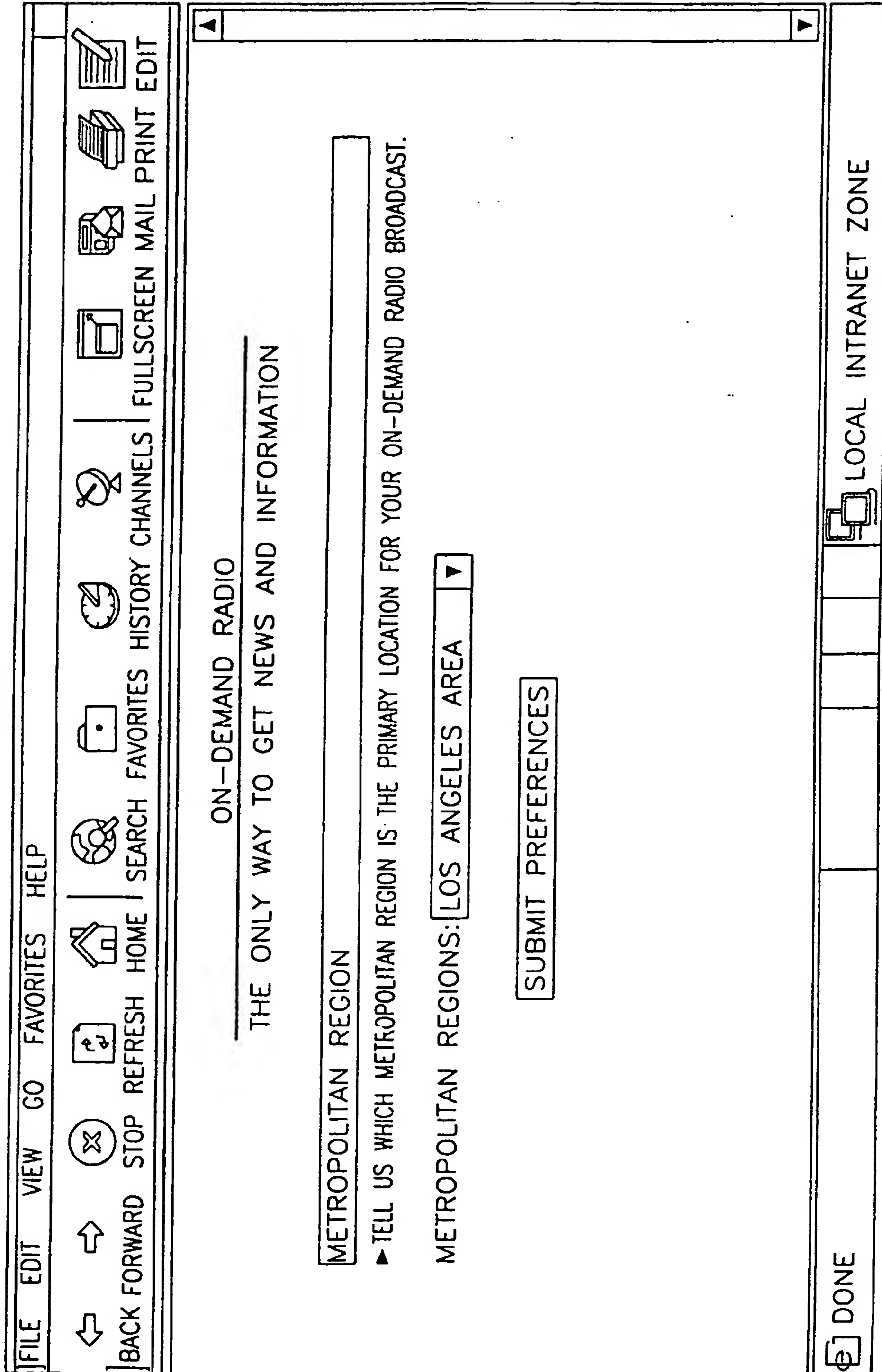


FIG. 6

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOME

SEARCHFAVORITESHISTORYCHANNELS

FULLSCREENMAILPRINTEDIT

TRAFFIC

COMMUTEROUTES

STOCKS

GENERALNEWS

BUSINESSNEWS

ENTERTAINMENTNEWS

SPORTSCORES

LA TRAFFIC REPORT

CLEARSELECTEDITEMS

TELL US WHICH FREEWAYS YOU WOULD LIKE TO INCLUDE IN THE BROADCAST, AND IN WHAT ORDER YOU WOULD LIKE THEM ARRANGED.

SELECTION

SELECTED

I-5 GOLDEN STATE FREEWAY  
I-5 SANTA ANA FREEWAY  
I-5 SAN DIEGO FREEWAY  
I-10 SANTA MONICA FREEWAY  
I-10 SAN BERNARDINO FREEWAY  
I-15 MOJAVE FREEWAY  
I-15 ONTARIO FREEWAY  
I-15 CORONA FREEWAY  
I-105 ANDERSON(CENTURY) FREEWAY  
I-110 PASADENA FREEWAY  
I-210  
I-210 FOOTHILL FREEWAY  
I-215/SR-215  
I-405 SAN DIEGO FREEWAY  
I-605 SAN GABRIEL RIVER FREEWAY

ADD>>  
<<REMOVE

TOP  
UP  
DOWN  
BOTTOM

SAVE SETTINGS

LOCAL INTRANET ZONE

DONE

**FIG. 7**

FILE

EDIT

VIEW

GO

FAVORITES

HELP

TRAFFIC

COMMUTE ROUTES

STOCKS

GENERAL NEWS

BUSINESS NEWS

ENTERTAINMENT NEWS

SPORTS SCORES

ADDRESS

LINKS

LA CUSTOMIZED TRAFFIC REPORT

CLEAR SELECTED ITEMS

▶ TELL US WHICH METROPOLITAN REGION IS THE PRIMARY LOCATION FOR YOUR ON-DEMAND RADIO BROADCAST.

SELECT ROUTES:

TO WORK ▼

STARTING ADDRESS:

123 1ST. STREET

CITY, STATE:

LA

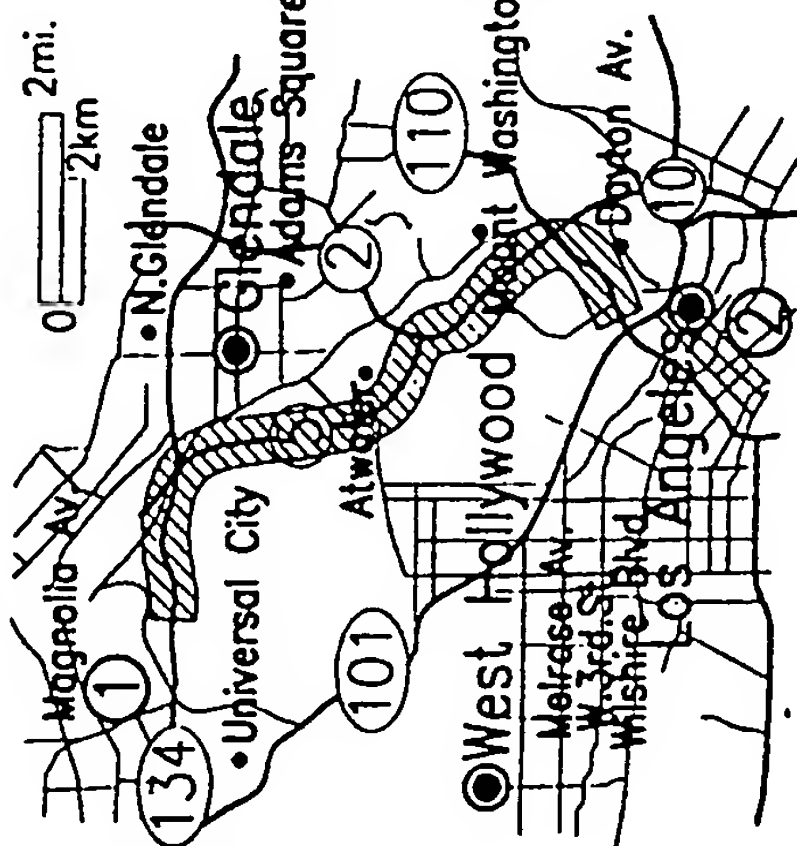
DESTINATION ADDRESS:

321 DOWNTOWN STREET

CITY, STATE:

LA

SHOW ME THE ROUTE



0 2mi. 2km

SAVE SETTINGS

LOCAL INTRANET ZONE

**FIG. 8**

FILE

EDIT

VIEW

GO

FAVORITES

HELP

TRAFFIC

COMMUTE ROUTES

STOCKS

GENERAL NEWS

BUSINESS NEWS

ENTERTAINMENT NEWS

SPORTS SCORES

ADDRESS

LINKS

STOCKS REPORT

CLEAR SELECTED ITEMS

▶ TELL US WHICH STOCKS YOU WOULD LIKE TO INCLUDE IN THE BROADCAST, AND IN WHAT ORDER YOU WOULD LIKE THEM ARRANGED.

SELECT MAJOR INDICES

DOW JONES INDEX

NASDAQ INDEX

S & P 500 INDEX

30 YEAR BOND

NIKKEI INDEX

HANG SENG INDEX

ENTER SYMBOLS SEPARATED BY COMMA

SELECTED STOCKS

IBM

QNTM

ADD>>

<<REMOVE

ADD>>

TOP

UP

DOWN

BOTTOM

SYMBOL LOOKUP

ENTER COMPANY NAME

ENTER

NUMBER OF SYMBOLS FOUND:

SAVE SETTINGS

DONE

LOCAL INTRANET ZONE

FIG. 9

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOMESEARCHFAVORITESHISTORYCHANNELSFULLSCREENMAILPRINTADDRESSLINKS

TRAFFICCOMMUTE ROUTESSTOCKSGENERAL NEWSBUSINESS NEWSENTERTAINMENT NEWSSPORTS SCORES

GENERAL NEWSRESTORE DEFAULT SETTINGS

▶ TELL US WHAT KIND OF GENERAL NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.

	HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST
WORLD	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
NATIONAL	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
LOCAL	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

SAVE SETTINGS

DONEDONELOCAL INTRANET ZONE



11/31

FIG.10

FILE EDIT VIEW GO FAVORITES HELP									
BACK	FORWARD	STOP	REFRESH	HOME	SEARCH	FAVORITES	HISTORY	CHANNELS	LINKS
ADDRESS PRINT MAIL FULLSCREEN									

BUSINESS NEWS				RESTORE DEFAULT SETTINGS			
▶ TELL US WHAT KIND OF BUSINESS NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.							
		HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST		
AGRICULTURE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
AUTO INDUSTRY	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
BROADCASTING	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
CHEMICAL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
COMPUTERS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
CORPORATE LIFE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
FINANCE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
HOSPITALITY	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
INTERNET	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
LEGAL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
MEDIA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
MEDICAL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

SAVE SETTINGS			
DONE LOCAL INTRANET ZONE			

FIG. 11

FILE

EDIT

VIEW

GO

FAVORITES

HELP

BACK

FORWARD

STOP

REFRESH

HOME

SEARCH

FAVORITES

HISTORY

CHANNELS

FULLSCREEN

MAIL

PRINT

ADDRESS

LINKS

GENERAL NEWS

BUSINESS NEWS

ENTERTAINMENT NEWS

SPORTS SCORES

TECHNOLOGY

SCIENCE

SPORTS NEWS

RESTORE DEFAULT SETTINGS

▶ TELL US WHAT KIND OF SPORTS NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.

	HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST
FOOTBALL NEWS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
BASEBALL NEWS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
BASKETBALL NEWS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
HOCKEY NEWS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
BICYCLING	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
GOLF	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
HORSE RACING	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
RUNNING	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
SOCCER NEWS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
TENNIS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

SAVE SETTINGS

DONE

LOCAL INTRANET ZONE

FIG. 12

FILEEDITVIEWGOFAVORITESHELP

ADDRESSLINKS

TRAFFIC

COMMUTE ROUTES

STOCKS

GENERAL NEWS

BUSINESS NEWS

ENTERTAINMENT NEWS

SPORTS SCORES

SPORTS SCORES

CLEAR SELECTED ITEMS

▶ TELL US WHICH TEAMS YOU WOULD LIKE TO INCLUDE IN THE BROADCAST, AND IN WHAT ORDER YOU WOULD LIKE THEM ARRANGED.

SELECT A LEAGUE

NATIONAL BASKETBALL ASSOCIATION ▼

SELECT SPORTS TEAMS

ATLANTA HAWKS  
BOSTON CELTICS  
CHARLOTTE HORNETS  
CHICAGO BULLS  
CLEVELAND CAVALIERS  
DALLAS MAVERICKS  
DENVER NUGGETS  
DETROIT PISTONS  
GOLDEN STATE WARRIORS  
HOUSTON ROCKETS  
INDIANA PACERS  
LOS ANGELES CLIPPERS  
LOS ANGELES LAKERS  
MIAMI HEAT  
MILWAUKEE BUCKS

ADD >>

<< REMOVE

SELECTED SPORTS TEAMS

-----NFL-----  
[NFL] SAN FRANCISCO 49'ERS  
[NFL] GREEN BAY PACKERS  
-----NBA-----  
[NBA] CHICAGO BULLS

TOP

UP

DOWN

BOTTOM

SAVE SETTINGS

DONE

LOCAL INTRANET ZONE

FIG. 13

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOMESEARCHFAVORITESHISTORYCHANNELSFULLSCREENMAILPRINTADDRESSLINKS

TRAFFICCOMMUTE ROUTESSTOCKSGENERAL NEWSBUSINESS NEWSENTERTAINMENT NEWSSPORTS SCORES

ENTERTAINMENT NEWSRESTORE DEFAULT SETTINGS

▶ TELL US WHAT KIND OF ENTERTAINMENT NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.

	HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST
CELEBRITIES	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
MOVIES	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
TV	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
BOOKS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

SAVE SETTINGS

DONEDONELOCAL INTRANET ZONE

FIG. 14

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOMESEARCHFAVORITESHISTORYCHANNELSFULLSCREENMAILPRINTADDRESSLINKS

ENTERTAINMENT NEWS

SPORTS SCORES

SPORTS NEWS

TECHNOLOGY

SCIENCE

HEALTH & LIVING

TRAVEL

SCIENCE NEWS

RESTORE DEFAULT SETTINGS

▶ TELL US WHAT KIND OF SCIENCE NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.

	HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST
ANIMALS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
PLANET EARTH	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
SPACE EXPLORATION	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

SAVE SETTINGS

LOCAL INTRANET ZONE

DONE

FIG. 15

FILE		EDIT		VIEW		GO		FAVORITES		HELP																																																																							
BACK		FORWARD		STOP		REFRESH		HOME		SEARCH																																																																							
ENTERTAINMENT NEWS		SPORTS SCORES		SPORTS NEWS		TECHNOLOGY		SCIENCE		HEALTH & LIVING																																																																							
ADDRESS		LINKS		PRINT		MAIL		FULLSCREEN		CHANNELS																																																																							
<table border="1"> <thead> <tr> <th colspan="2">RESTORE DEFAULT SETTINGS</th> <th colspan="2">HIGH INTEREST</th> <th colspan="2">MODERATE INTEREST</th> <th colspan="2">SLIGHT INTEREST</th> <th colspan="2">NO INTEREST</th> </tr> </thead> <tbody> <tr> <td colspan="10"> <p>▶ TELL US WHAT KIND OF HEALTH NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.</p> </td> </tr> <tr> <td colspan="2">FITNESS</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td colspan="2">FOOD &amp; DIET</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td colspan="2">MEDICINE &amp; DISEASES</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td colspan="2">PSYCHOLOGY</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td colspan="2">LIFE STYLES</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </tbody> </table>												RESTORE DEFAULT SETTINGS		HIGH INTEREST		MODERATE INTEREST		SLIGHT INTEREST		NO INTEREST		<p>▶ TELL US WHAT KIND OF HEALTH NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.</p>										FITNESS		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	FOOD & DIET		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	MEDICINE & DISEASES		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	PSYCHOLOGY		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	LIFE STYLES		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RESTORE DEFAULT SETTINGS		HIGH INTEREST		MODERATE INTEREST		SLIGHT INTEREST		NO INTEREST																																																																									
<p>▶ TELL US WHAT KIND OF HEALTH NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.</p>																																																																																	
FITNESS		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																																																								
FOOD & DIET		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																																																								
MEDICINE & DISEASES		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																																																								
PSYCHOLOGY		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																																																								
LIFE STYLES		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																																																																								
SAVE SETTINGS						LOCAL INTRANET ZONE																																																																											
<p>▶ DONE</p>																																																																																	



FIG. 16

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOMESEARCHFAVORITESHISTORYCHANNELSFULLSCREENMAILPRINTADDRESSLINKS

ENTERTAINMENT NEWS

SPORTS SCORES

SPORTS NEWS

TECHNOLOGY

HEALTH & LIVING

TRAVEL

TRAVEL NEWS

RESTORE DEFAULT SETTINGS

TELL US WHAT KIND OF TRAVEL NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.

	HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST
CRUISES	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
U.S. DESTINATIONS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
FOREIGN DESTINATIONS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

SAVE SETTINGS

DONE

LOCAL INTRANET ZONE

FIG. 17

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOMESEARCHFAVORITESHISTORYCHANNELSFULLSCREENMAILPRINTADDRESSLINKS

TECHNOLOGY NEWSRESTORE DEFAULT SETTINGS

TELL US WHAT KIND OF TECHNOLOGY NEWS YOU'D LIKE TO INCLUDE ON YOUR ON-DEMAND RADIO BROADCAST.

	HIGH INTEREST	MODERATE INTEREST	SLIGHT INTEREST	NO INTEREST
BIO TECHNOLOGY	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
COMPUTERS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
INTERNET	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
TELE COMMUNICATIONS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
OTHER TECHNOLOGY TOPICS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

SAVE SETTINGS

DONELocalIntranetZone

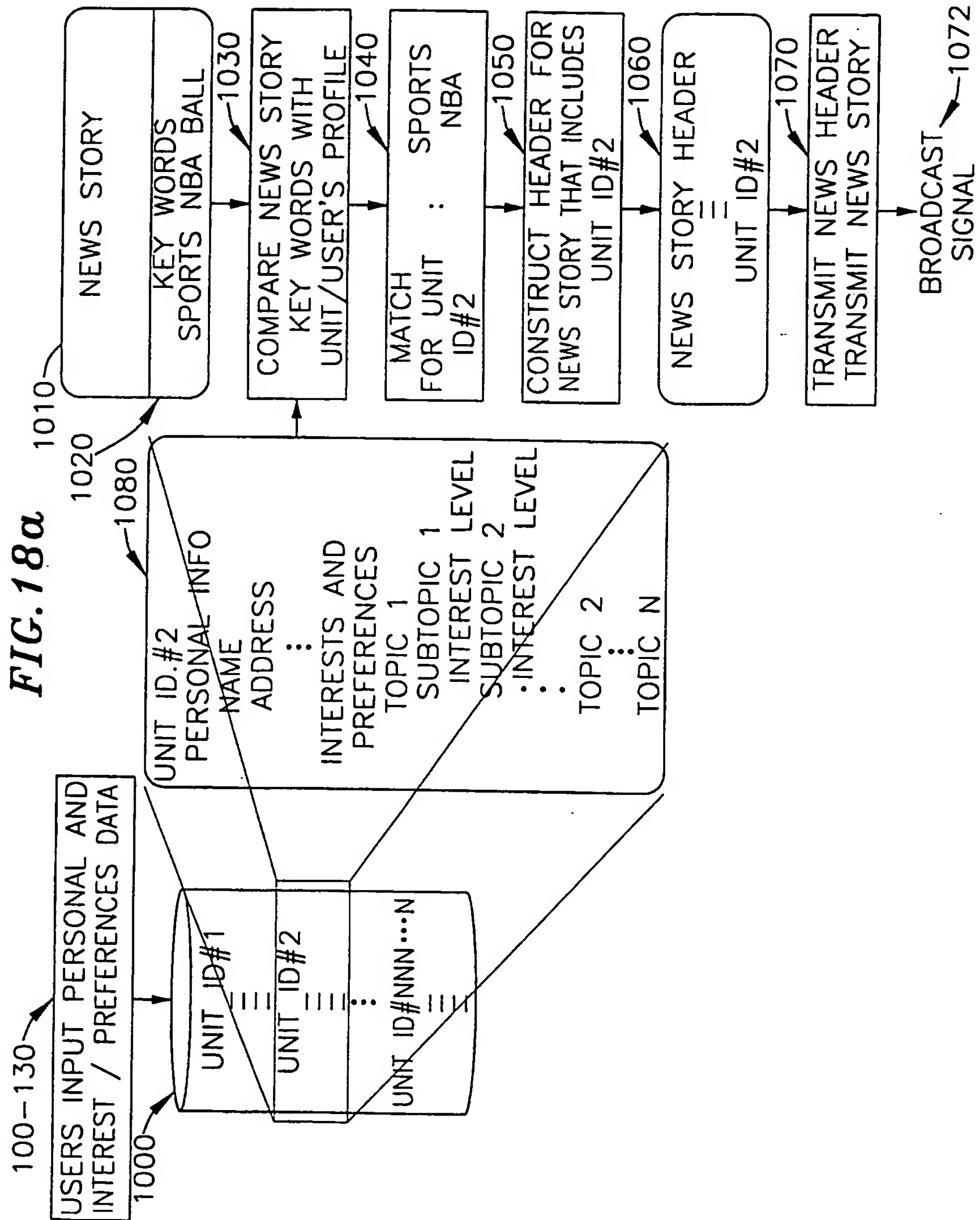


FIG. 18b

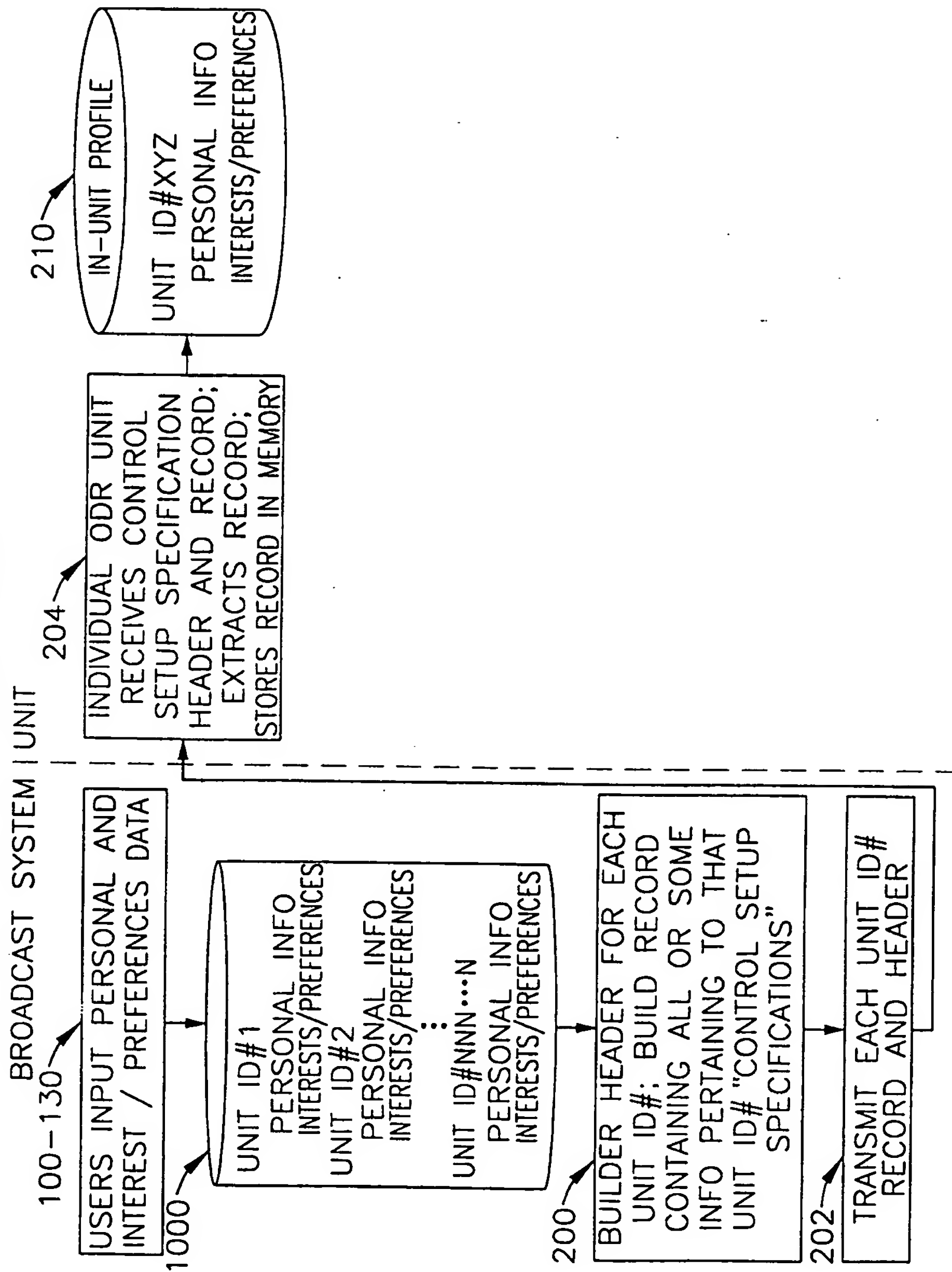


FIG. 18c

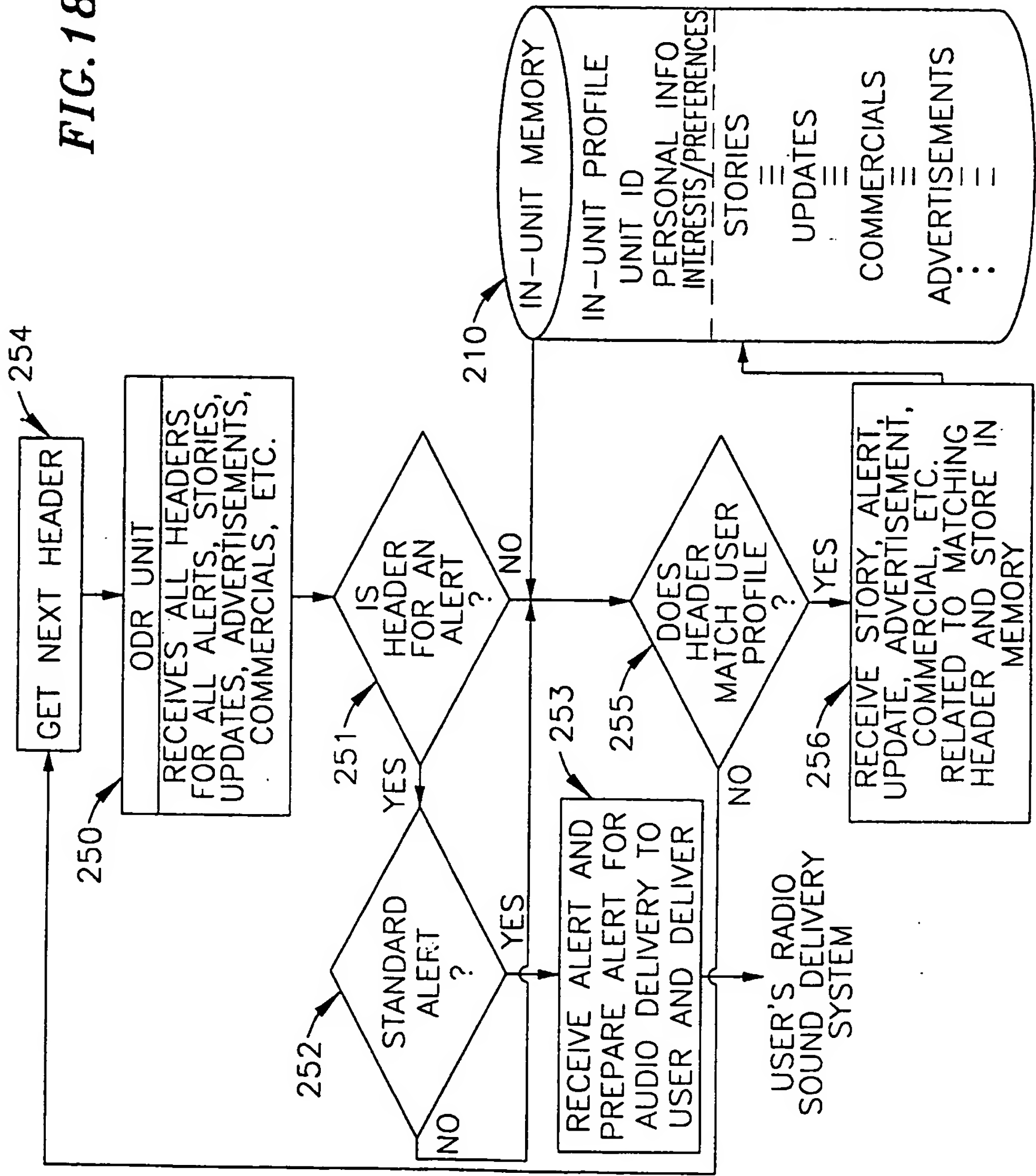


FIG. 18d

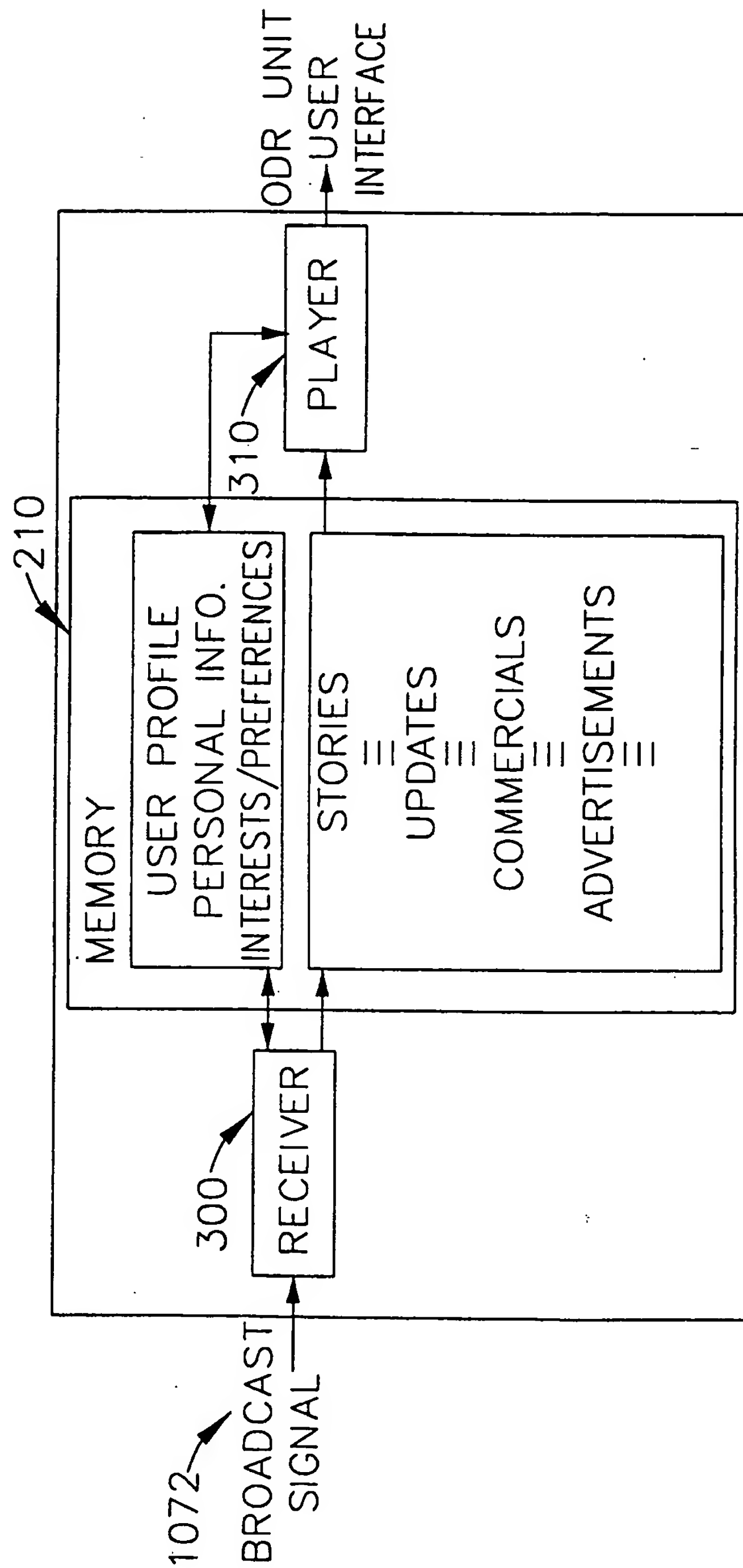




FIG. 18e

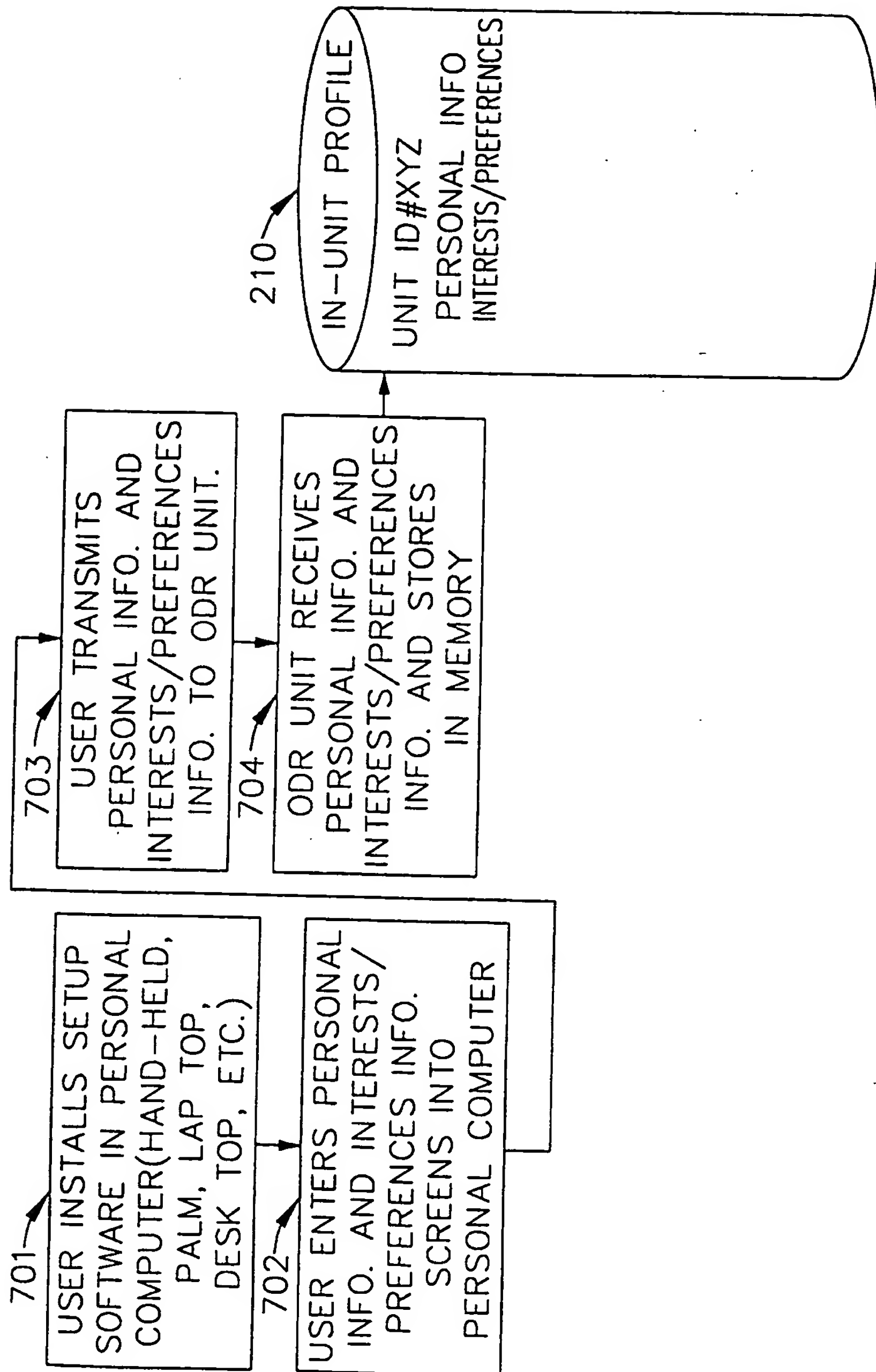


FIG. 19a

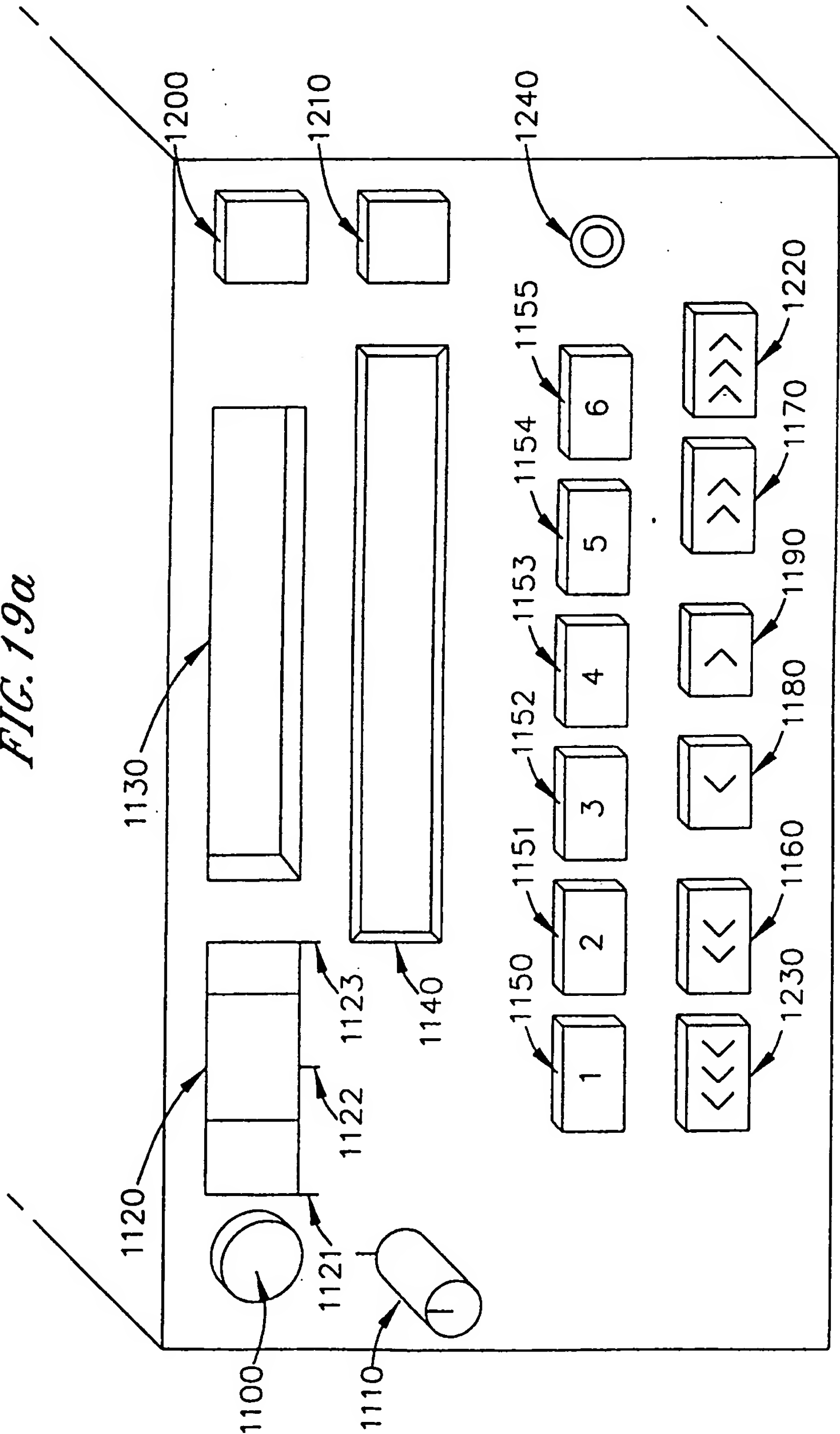
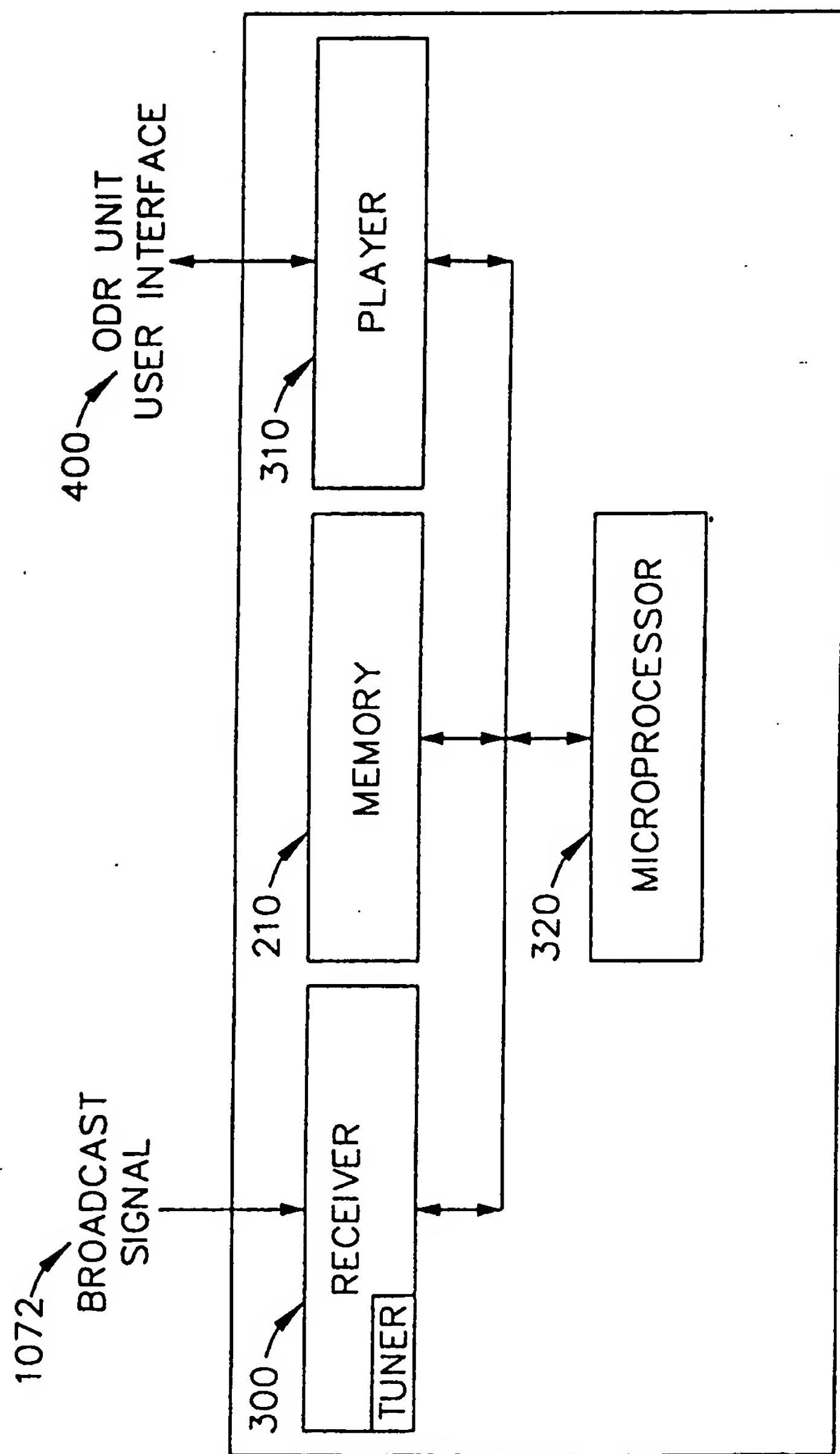


FIG. 196



26/31

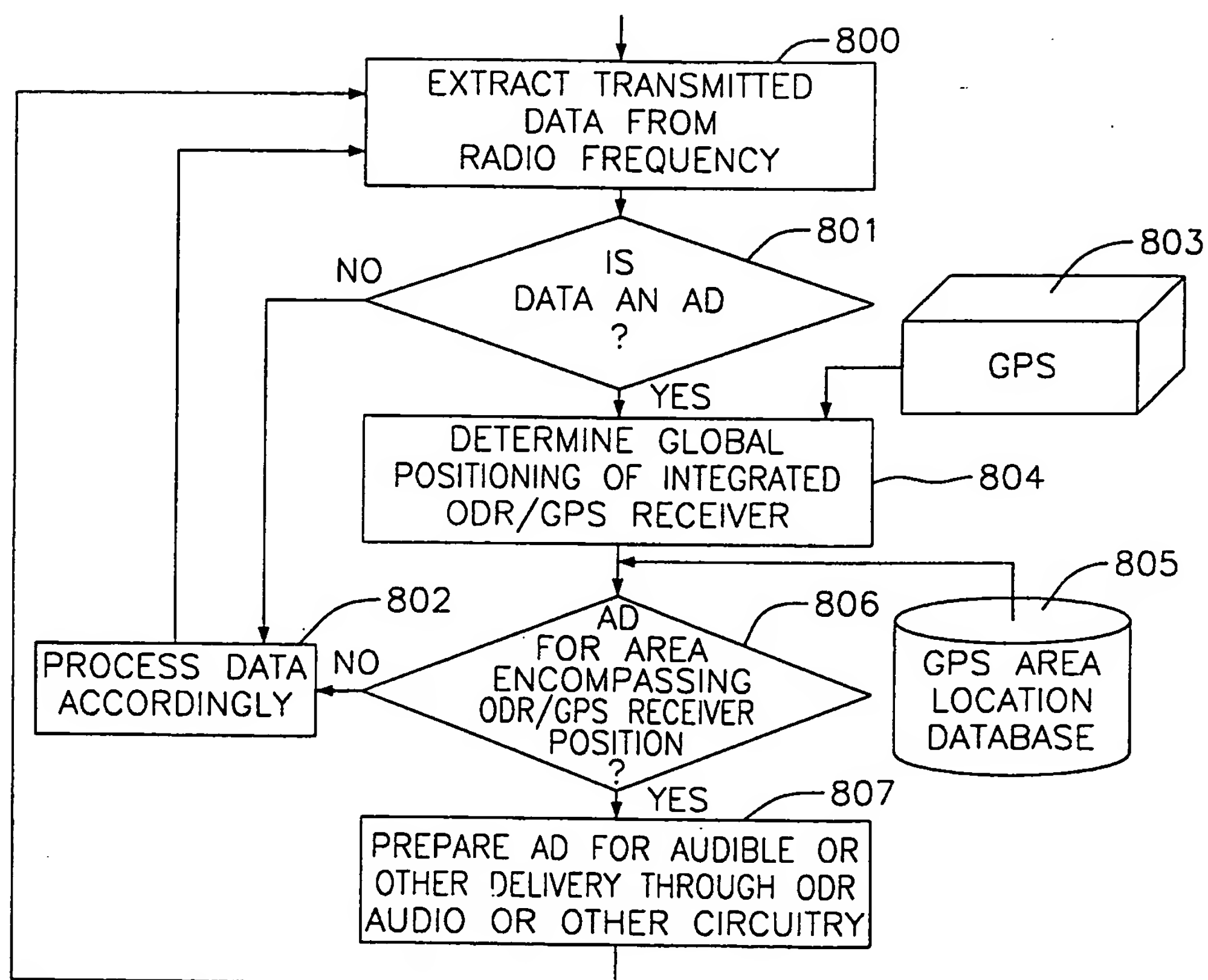
**FIG.20**

FIG. 21a

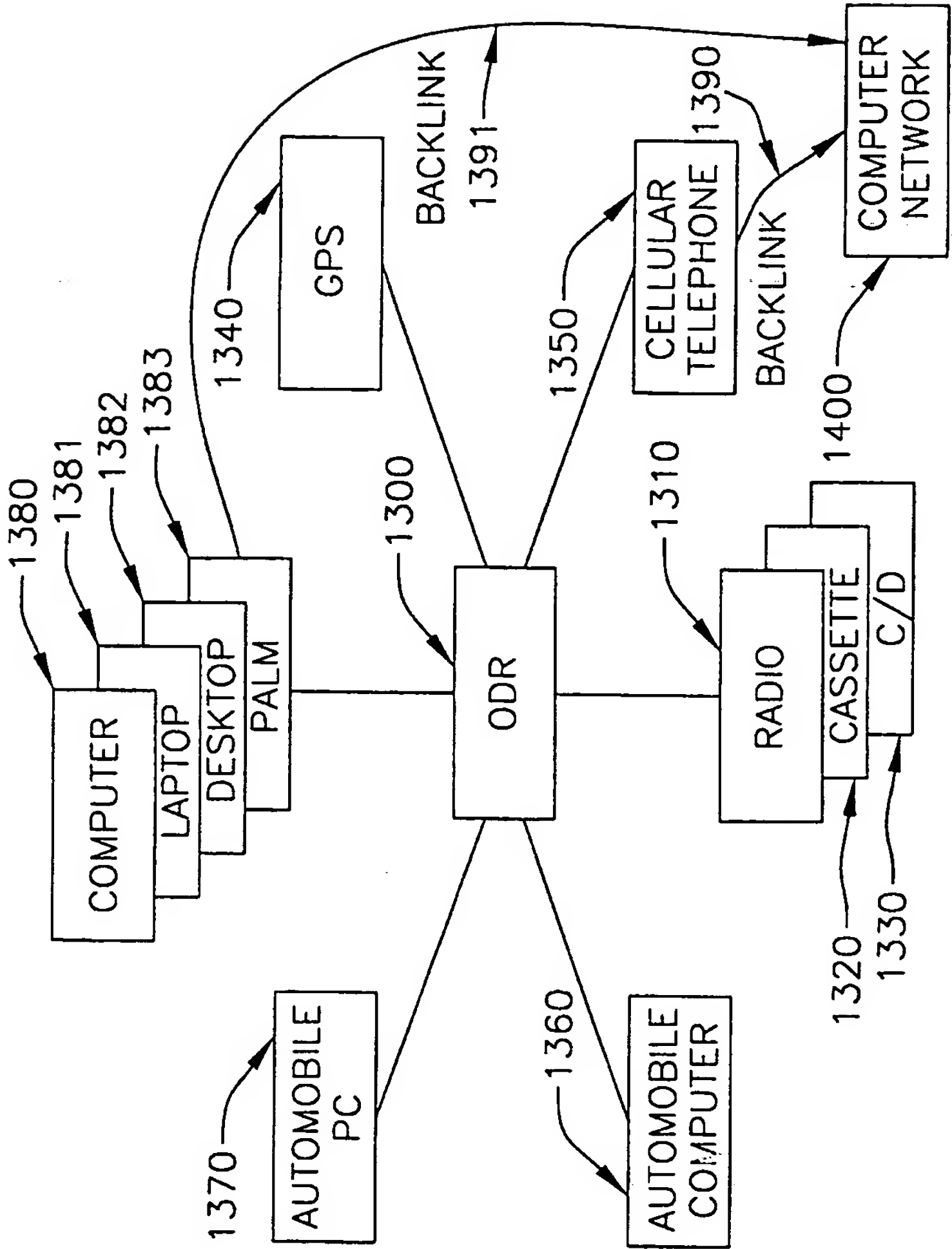


FIG. 21b

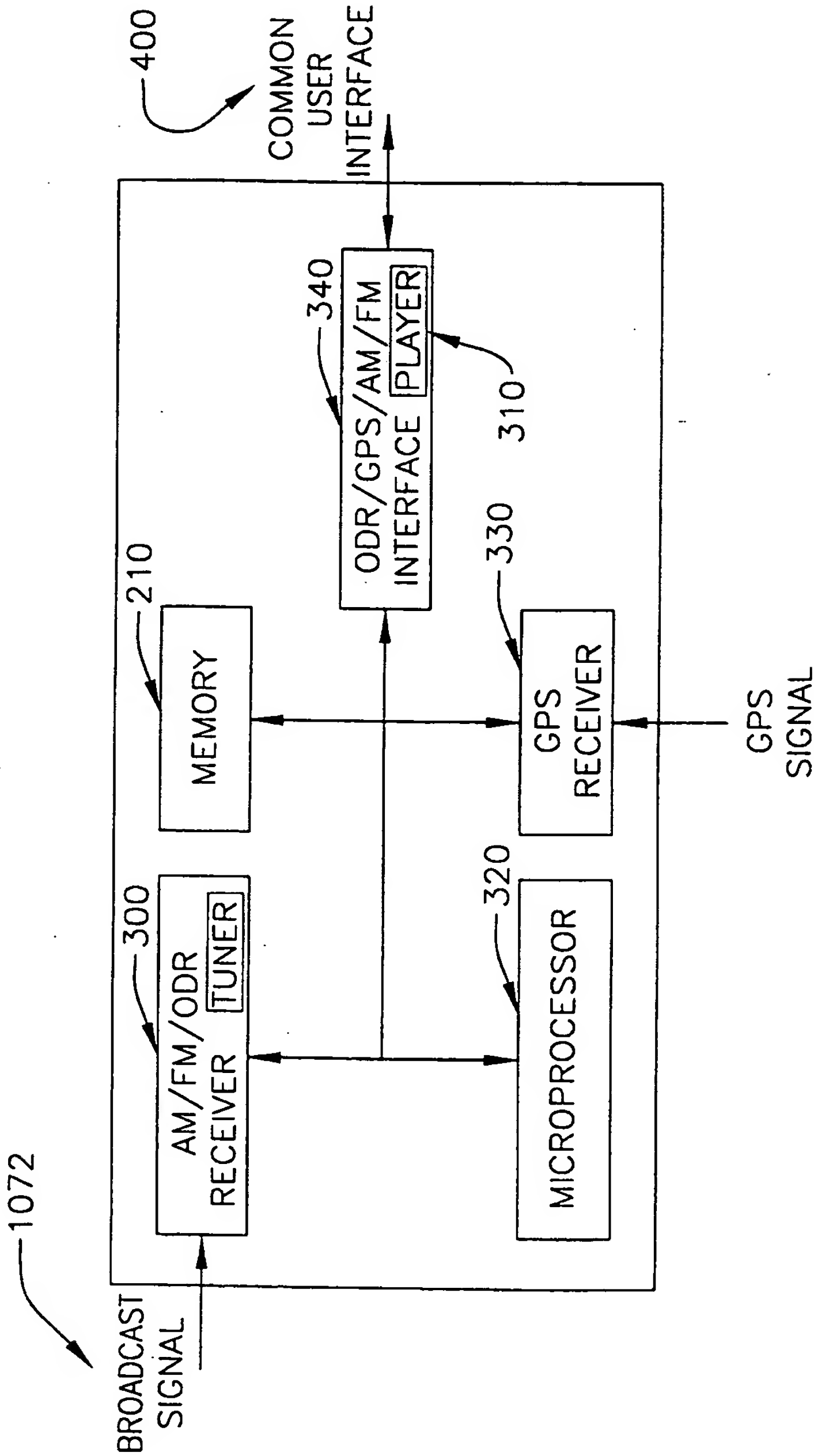




FIG. 21c

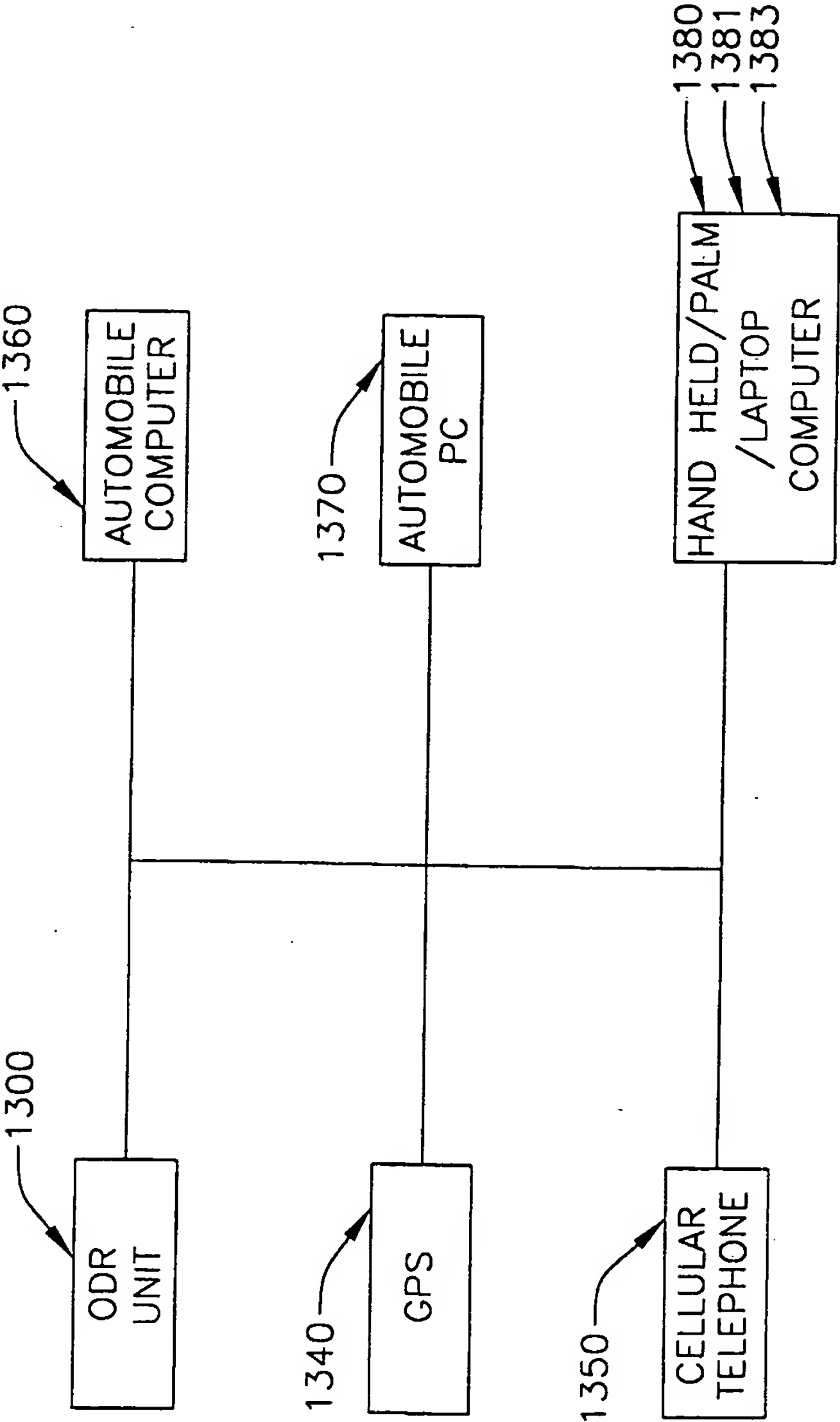


FIG. 22

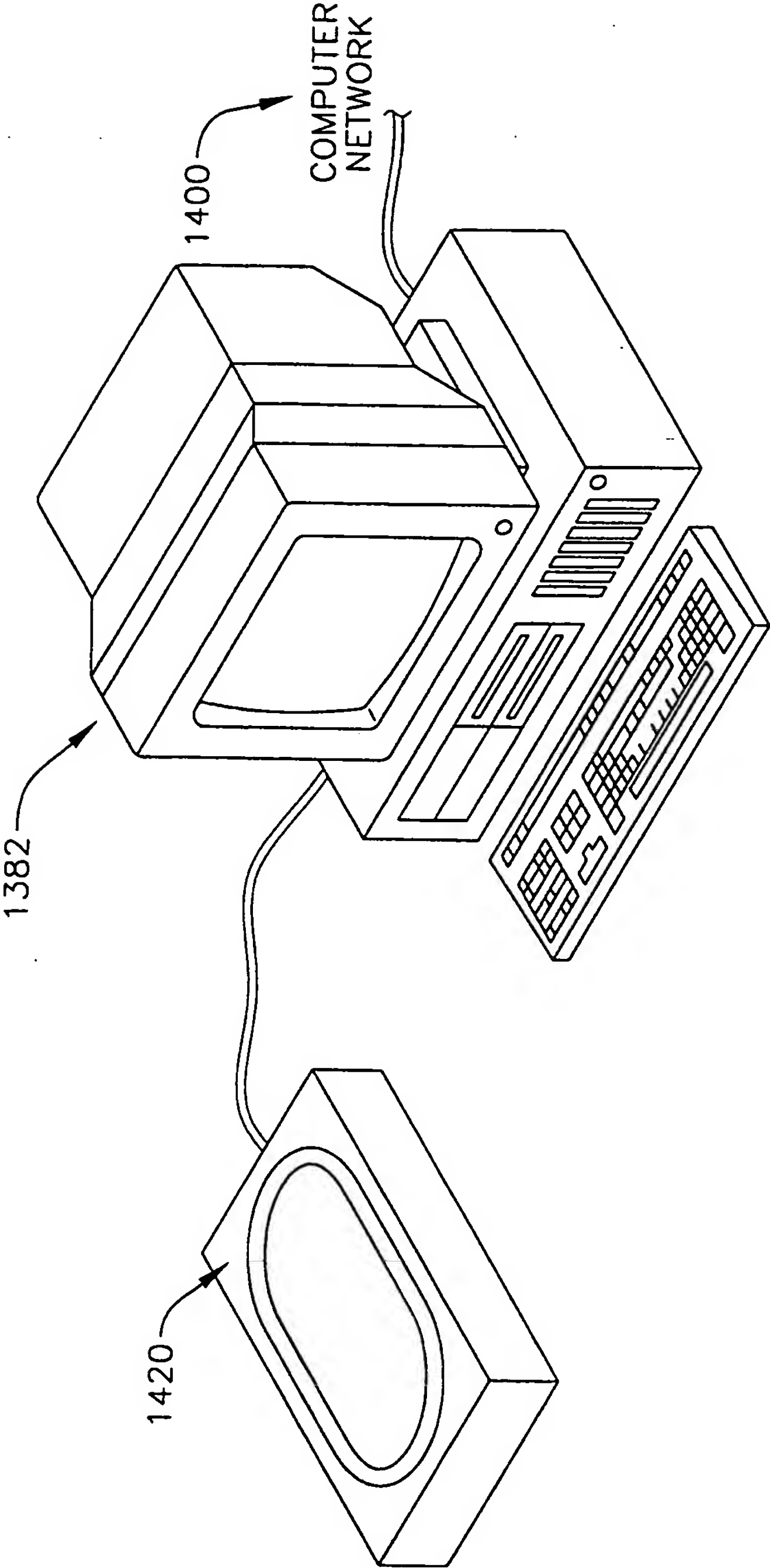


FIG.23

FILEEDITVIEWGOFAVORITESHELP

BACKFORWARDSTOPREFRESHHOME

SEARCHFAVORITESHISTORYCHANNELSFULLSCREENMAILPRINT

ADDRESSLINKS

KQED 88.5 FM PROGRAM GRID

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
MID	WEEKEND ALL THINGS CONSIDERED						WEEKEND ALL THINGS CONSIDERED
1 AM	CAMBRIDGE FORUM						WEEKLY EDITION
2 AM	SOUND MONEY	WORLD AFFAIRS COUNCIL	CITY ARTS	EVENING FORUM		COMMONWEALTH CLUB	LIVING ON EARTH LATINO USA
3 AM						WASHINGTON WEEK	TO THE BEST OF OUR KNOWLEDGE
4 AM						WALL STREET WEEK	
5 AM						COMMON GROUND	
6 AM						INSIDE EUROPE	

SIGN UP HERE:

LOCAL INTRANET ZONE

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/02244

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H03J1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H03J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X  A	<p>EP 0 813 302 A (NIPPON ELECTRIC CO) 17 December 1997 (1997-12-17)</p> <p>column 3, line 39 - line 56</p> <p>column 4, line 29 - line 42</p> <p style="text-align: center;">-/-</p>	<p>1-7, 12, 20, 27, 34, 41, 56 19, 22, 36, 48, 49, 51-53, 55, 58, 63, 70, 71</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

29 May 2000

Date of mailing of the international search report

07/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3018

Authorized officer

Peeters, M

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/02244

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 196 21 424 A (TELEMEDIA GMBH) 4 December 1997 (1997-12-04)  column 2, line 27 - line 59 column 3, line 55 -column 4, line 1	8,9,11, 15,21, 23,24, 26,30, 37,38, 40,44, 57,59, 60,62,66
A	WO 95 08226 A (MACKINNON RUSSELL D N ;METEOMEDIA INC (CA)) 23 March 1995 (1995-03-23) claims 9-11 column 3, line 55 -column 4, line 1	10,25, 39, 52-55,61
A	US 5 794 164 A (BECKERT RICHARD D ET AL) 11 August 1998 (1998-08-11)  column 1, line 66 -column 3, line 32	15,17, 18,30, 32,33, 44,46, 47,66, 68,69
A	US 5 689 270 A (GREENBAUM LOUIS A ET AL) 18 November 1997 (1997-11-18) abstract	1
A	US 5 432 542 A (THIBADEAU ROBERT ET AL) 11 July 1995 (1995-07-11) column 14, line 42 - line 60	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. Application No

PCT/US 00/02244

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0813302 A	17-12-1997	JP 9331266 A	22-12-1997
DE 19621424 A	04-12-1997	NONE	
WO 9508226 A	23-03-1995	CA 2106222 A	16-03-1995
		AT 153201 T	15-05-1997
		AU 679260 B	26-06-1997
		AU 7649594 A	03-04-1995
		BR 9407697 A	04-02-1997
		DE 69403222 D	19-06-1997
		DE 69403222 T	11-09-1997
		DK 719482 T	03-11-1997
		EP 0719482 A	03-07-1996
		ES 2102879 T	01-08-1997
		GR 3024410 T	28-11-1997
		JP 9511364 T	11-11-1997
		NZ 273262 A	22-09-1997
		US 6016158 A	18-01-2000
US 5794164 A	11-08-1998	AU 691434 B	14-05-1998
		AU 1125997 A	19-06-1997
		AU 718236 B	13-04-2000
		AU 7852898 A	01-10-1998
		CA 2211660 A	05-06-1997
		EP 0804351 A	05-11-1997
		JP 11500084 T	06-01-1999
		WO 9719833 A	05-06-1997
		US 6009363 A	28-12-1999
US 5689270 A	18-11-1997	US 5499032 A	12-03-1996
		US 5280295 A	18-01-1994
		US 5173710 A	22-12-1992
		CA 2179169 A	22-06-1995
		AU 665571 B	11-01-1996
		AU 2540292 A	16-03-1993
		CA 2114648 A	04-03-1993
		EP 0598844 A	01-06-1994
		JP 6510120 T	10-11-1994
		WO 9304378 A	04-03-1993
US 5432542 A	11-07-1995	US 5565909 A	15-10-1996